

# The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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## The Woods Endless Bed Double Surfer.

Among the improved woodworking machines brought out recently is the one shown in the accompanying illustration, from which the details of several useful features can be gathered. It is described as an endless or lag-bed double surfer. Lag-bed planers have always been preferred for doing rapid or heavy surfacing, on account of their strong and sure feed. With the introduction of the combination chip breaker, peculiar to the machines made by the S. A. Woods Machine Company, of this city, who manufacture the surfacer we are describing, it became possible to do really fine as well as rapid work—a fact which greatly enhanced the value of machines of this character. The present machine was gotten up in an effort to keep pace with the needs of woodworkers, and to produce something which if possible should surpass the machine of the same general class formerly made by this company. We will briefly notice some of the points to which the manufacturers refer as being among the superior devices in this machine. The carrying-out feed rolls are 6½ inches in diameter. They take the lumber after it leaves the traveling bed, and carry it over the under cylinder and completely through the machine without any pulling or pushing by hand, thus avoiding the necessity of the operator following one board immediately after another, or squaring up the boards having irregular ends. Each board takes care of itself. These rolls are strongly geared with expansion gears, and always travel at a speed uniform with that of the bed. The top roll and connections swing around easily, thus giving free access to the under cylinder for sharpening and adjusting the knives. The top cylinder is heavily steel faced, and carries three knives. The under cylinder is driven from a short counter on the floor, thus doing away with the necessity of binders or idlers. It can also be driven from above when necessary. The front pressure roll is in two sections, which is a feature of great importance. It allows two boards of different thicknesses to be planed at the same time. There is no halting of the thin board while the thicker one receives the pressure. The combination chip breaker and shaving guard, already referred to, is applied in sections, to correspond with the pressure roll, thus effectually preventing the tearing or splitting of cross-grained lumber, and allowing work to be done very rapidly, and in the best manner. There are a number of other valuable points in this machine, but space forbids a more extended description. The machine is thoroughly built, is heavy and strong in all its parts, and is carefully tested at the manufactory before being shipped. It planes 27 or 30 inches wide and 10 inches thick. The total weight is 5550 pounds.

**The Manufacture of Wire in Westphalia, Germany.**—It appears that the manufacture of wire existed in the vicinity of Altena, Lüdelscheid and Isorlohn, Westphalia, Germany, as early as the close of the fifteenth century. When Altena was burned down in 1518, the Duke of Cleve, in order to assist in building up the town, ordered that no wire drawers leave the city in order to work at other places. Similar provisions were in force in 1662, when the right to make or manufacture wire was hereditary, and every wire drawer was forced to swear that he would not employ or teach the trade to any outsider. At that time the bar iron was first hammered to small rods, which were then drawn. It was only in the beginning of the present century that rolling mills were introduced. They were driven by water-power, but not at a speed exceeding 140 to 180 revolutions. The trains were three-high, and had three sets of rolls, the first roughing set having gothic grooves, the second oval and the third round grooves. The finest wire rolled was 0.25 inch in diameter. It is stated that the production of such a train was not more than 1 ton per day. About 30 years ago the modern fast-running trains were introduced, the first one, built by Kissing & Schmölle, at Röhdinghausen, being run by water-power at a rate of 300 to 320 revolutions per minute. The production rose to 3 to 4 tons per day. A wooden train at Crousthal has a 100-horse-power steam engine and runs at 500 revolutions, and seven sets of rolls. It rolls 1.9 to 2-inch bars, 4 to 4.5 feet long. In order to roll 0.24-inch iron, these bars are passed through 14 times, the time occupied in rolling it being 30 seconds. There are now in Westphalia 40 fast trains, and as each is on the average capable of turning out 5000 tons of wire per annum, the total capacity of the district is 200,000 tons.

An English company has been formed to work the copper mines of the island of Michipicoten, on the north shore of Lake Superior. At a recent meeting the opinion was expressed that the company would be able to enter their granular metallic copper into this country as ore without paying duty. In view of the fact that this ore is pure copper, and need only be remelted to be cast into

ingots, it is likely that our customs officers will take quite a different view of the matter.

## The New Cape Henry Lighthouse.

The Philadelphia Record says: A structure which, when erected, will, in the opinion of government experts, be the finest and strongest lighthouse in the world is now being shipped in sections from the downtown iron works of Messrs. Morris & Tasker. It has been in process of construction for 18 months, and has required the labor of an average of 40 men per day for every working day during that period. The design was drafted in the Treasury Department at Washington, by experts who had previously visited most of the leading lighthouses of England and the Continent for the purpose of gaining experience and new ideas, and so desirous has been the department that the plans should be carefully followed, that every week or ten days for the last year and a half the progress of the work has been critically examined by John Murdoch, Assistant Inspector of Lighthouse Engineers of the fifth Baltimore district, who was specially detailed for that purpose.

The future location of this model lighthouse will be in the Chesapeake Bay, off Cape Henry. From base to top it measures 155 feet, with a diameter at the base of 30

shops, and, having been finally passed by the inspectors, they are now being taken apart and packed in boxes. The work of erection, which it is calculated will occupy a year, will be done by government workmen, the firm sending three expert employees as overseers.

## American Plate Glass.

We have several times referred to the growing importance of the plate glass industries in this country. After a little more than ten years of trial, and, for a considerable part of the time, of discouragements, our manufacturers are rapidly getting into a position where they will be able to supply the demand of the country for this article. The plate glass works at present built are in Berkshire County, Mass.; New Albany and Jeffersonville, Ind.; Louisville, Ky., and Crystal City, near St. Louis. A new establishment is building near Pittsburgh, and it is rumored that the Louisville works will be removed to a point near Pittsburgh and considerably enlarged. In the census year ending May 31, 1880, the country made 1,700,227 square feet. In the year just ended May 31, 1880, the product has exceeded 2,000,000 square feet, and in the coming year this total will show a further large increase.

It used to be the proper thing to cry down

terprise. As the Supreme Court will not meet again until September, there is more delay than was anticipated, but the contracts have been made with Joseph Patterson, of Baltimore, for three sections, comprising 7050 feet, or about 1¼ miles, and agrees to complete the whole in two years from the day he is notified to begin work. In the lower wards, from the Battery upward, the work will be done mainly by mining and driving the tunnel, without breaking the surface. Col. Vanderburgh is quite enthusiastic in describing the future great underground thoroughfare, with its marble floors, spacious apartments, brilliant electric lights and handsome passenger coaches rushing hither and thither, under the power of compressed air. When reminded of the designs of hostile companies, the officers do not dispute the right of their opponents to go as deep into the earth as they see fit, only taking heed how they encroach on rights which antedate all others. Means for prosecuting the work to a successful termination are ample when once the route on Broadway is assured beyond a question.

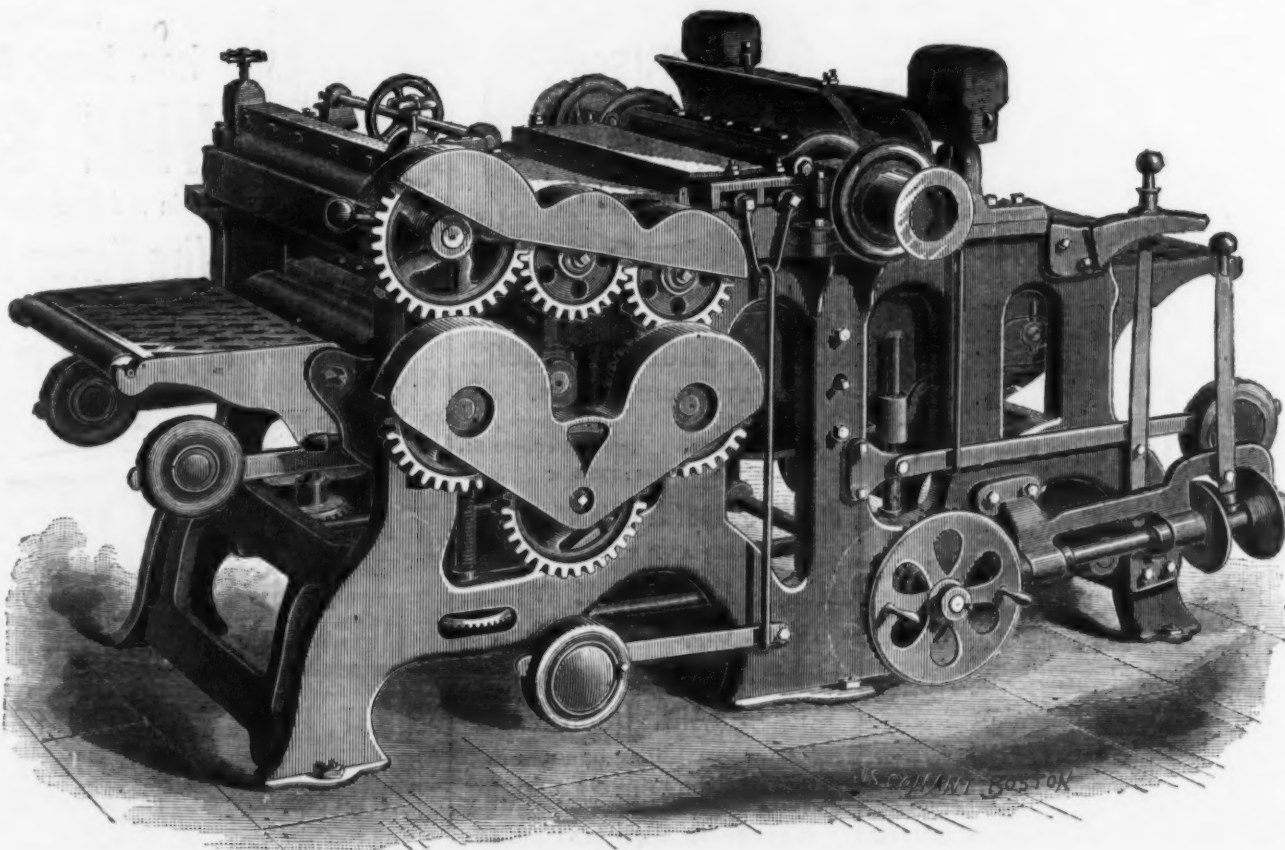
## The Manufacturing Industries of Reading.

Reading is one of the most prosperous cities of Pennsylvania, and, in proportion to

The oldest concern in this line is the Reading Hardware Company, which at present gives direct employment to about 600 hands. In addition to their general line of hardware goods they have recently added to their specialties a tobacco cutter with slicing knife, which already commands an extraordinarily large sale. They have also introduced a self-measuring faucet, for which they claim some features of unusual merit. Another recent addition is a full line of stationers' hardware, and the manufacture of steel bearing scales, all of which are meeting with considerable favor. Their line of locks, knobs, flower-pot brackets, cast butts, registers, &c., are well known at home and abroad. Their apple parers are of five different patterns and have always had an enormous sale, which is expected to be larger than ever this year. The general business of the company shows a material increase on any previous season, and to give facilities for the manufacture of the new goods alluded to, a new 200-horse-power engine is now being put in and several new buildings have been erected. The Pennsylvania Hardware Company, of Reading, is also an active and growing concern. A large establishment is to be built at an early date, details of which have already appeared in *The Iron Age*. The firm employ about 150 hands at present, but expect to more than double that number as soon as their new building is completed. Rick Bros. run about 100 hands, and have for many years had a steady business in the manufacture of butts, hinges, &c. On the whole there is probably no other city of 40,000 population which turns out so many articles of interest to the iron and hardware trades, as the bright and vigorous little city of Reading. The Pennsylvania Graphite Mining and Manufacturing Company have their office at Eighth and Penn streets, and are turning out about 30 tons of pure plumbago per month. The demand is very large and far beyond their present production. The Gautier Steel Company, at Johnstown, at present absorb the entire output of the mines.

The effects of saline vapors upon iron structures within the sphere of their influence are worthy of notice. For warehouse purposes and for pier sheds iron is growing in favor. The Union Ferry Company, whose first iron ferry-house was built in 1863 at the Fulton street landing, in this city, have just completed their plans for a more extensive structure at the Wall street ferry landing in Brooklyn. The new building will be of wood, sheathed with galvanized iron, special care being taken that not only the rivets, but the perforations to receive them, are fully protected by an anti-corrosive metal. The Fulton Ferry building was not galvanized, and in consequence it became necessary several years ago to renew the roof. The experience of the company in the use of iron boats is not altogether decisive, there being many advantages which are offset by corresponding objections. One of the senior officers most familiar with the subject says it is necessary to remove the iron boats from the water at least once a year to renew the paint, and their original cost is nearly double compared with wood. On the other hand, it is possible to divide iron hulls by means of bulkheads which retain their place, whereas wooden bulkheads shrink, and are forced from their position by the violent surging of the boats against the bridge and fenders. The iron boat does not strike so heavily, but this fact disqualifies the boat in contending with ice, for she lacks the momentum requisite to carry her through against a resisting body. Weighing the relative advantages and disadvantages of wood and iron when employed in the construction of boats for ferry purposes, it is difficult to say which has superior claims. The Pennsylvania Railroad Company have decided to build their next boat for the North River wholly of iron.

It is stated that a concern in Philadelphia, called the Phoenix Manufacturing Company, has succeeded in utilizing tin scraps. The establishment comprises a furnace, cupola and foundry. Three dollars per ton are paid for the scraps, delivered on the premises. These are placed in the furnace and carbonized to such an extent as to make a soft iron or semi-steel. It is claimed that one ton of tin scraps will make a ton of metal, and by condensing the fumes from the furnace with water, 80 pounds of oxide of tin are recovered. The latter article is said to be very valuable. By introducing pure carbon in a pulverized state into the melt, by a process, it is claimed, peculiar to the inventors, graphite enters into the metal, greatly improving it. The company manufacture nearly all their production of metal—the establishment having a capacity of three tons a day—into grate bars, and irons, street car boxes, &c. In their manufacture of street car boxes they claim to use steel, which gives durability; a small admixture of graphite, which absorbs the lubricating oil, and a like proportion of tin, which smooths the bearing parts. For some of the processes in the making of soft iron and its subsequent manufacture into other articles, patents have been applied for.



THE WOODS ENDLESS BED DOUBLE SURFACER.

feet and at the top of 16 feet. There are six stories, above which are a service room, watch room, lantern room and finally the roof. Its total weight is 1,700,000 pounds, 7000 pounds of bolts alone being required to put it together. The exterior, which is octagonal in shape, is constructed of cast iron, while the cylindrical interior is of sheet iron. The castings of the base and first story are 2 inches in thickness, and the sheet-iron lining ¾ of an inch. The staircase, which has 180 steps, goes around the cylinder instead of up a shaft, as in the lighthouses now in existence. The "light room" is a circular steel frame 12 feet in diameter and 9 feet high. The glass to be used is now being manufactured in France, and a light of great power will be adopted. Every story is solidly bolted together by heavy cast-iron floor plates 1½ inches thick, while the points and facings are finely planed, four planers having been kept running day and night for the entire 18 months. So closely are the plates fastened together that from the outside each story looks like a solid piece of iron. The base and windows are elaborately ornamented with castings, while a handsome iron railing surrounds the watch room. Many of the bolts are 1¼ inches in diameter at one end, and ¾ of an inch at the other, which is considered in the trade an extraordinary size.

The first four stories of the structure were to have been shipped in the fall of last year, but in consequence of the government wharf having been destroyed, operations have been delayed until the present time. So much space did the material occupy that the firm was compelled to erect the four stories on the vacant lot at the southeast corner of Third and Tasker streets, and the towering structure at first created considerable speculation in the neighborhood as to its purpose. For the last two weeks a large force of workmen has been employed in pulling it to pieces preparatory to shipment. The upper stories were put together in the large work-

the quality of American iron and steel, hardware and other manufactures, but no one, unless he is uninformed, does so now, and the same is rapidly becoming true of our plate glass. It is as good as the French and Belgian, and better than the English, all reports to the contrary notwithstanding. A further proof of this has just come to our knowledge. The contract for the glass for the new Iowa State House, at Des Moines, has just been let to the Crystal City Plate Glass Company, Missouri. The building will require 17,000 square feet of polished plate glass. There were seven or eight bids, all accompanied by samples, some of them representing English, French and Belgian manufactures. This company has also furnished the glass for the Metropolitan Museum of Fine Arts in New York, for the State House at Albany, for the United States Custom Houses at Chicago and Little Rock, for the Shillito Building in Cincinnati, for all the large edifices in St. Louis, and for numerous buildings throughout the country. Those that we have named are readily accessible, and it can very easily be ascertained whether the glass is in any way inferior to any other glass made anywhere. We are convinced that if we had the data we could tell the same story about De Pauvo's New Albany glass. Two things seem certain—the manufacture of plate glass is firmly established in this country, and its quality is equal to the best foreign.

**Underground Railroads.**—The Commissioners of the Supreme Court, appointed on the application of the Broadway Underground Connecting Railway Company, to hear all persons interested in the grant of a right of way and in the manner of building, give notice that they will meet July 6. Col. Vanderburgh and the officers of the company, of whom Geo. B. McClellan is president, yesterday expressed themselves with utmost confidence in regard to priority of their claim and ultimate success of the en-

population, one of the most important. Its industries connected with the manufacture of iron goods of various kinds are large and increasing.

The Reading Coal and Iron Company have their rolling mills and car shops here, employing about 2000 hands. The Reading Iron Works employ about the same number in their various establishments, in which they manufacture pig iron, wrought-iron pipe, nails, &c. They also manufacture cotton presses, mining pumps and all kinds of heavy machinery, and have a large amount of work of this character under contract. J. H. Sternbergh carries on a large business in the manufacture of bolts and nuts, and is making a considerable addition to his already very complete establishment. Orr, Painter & Co. are doing a steadily increasing trade in stoves, and have another new foundry almost ready for occupancy, when they will have one of the most compact and convenient foundries to be found anywhere. Their trade has gradually extended West and South, until their name has become almost a household word on the Atlantic and Gulf coasts. Their Texas trade promises to be very large, some of their stoves having been specially prepared for the requirements of buyers in that section, for which orders are coming in quite rapidly. Another firm is building a large stove foundry, but will scarcely be in a position to do much this year. The Mellert Foundry and Machine Company make a specialty of cast-iron water and gas pipe, valves, hydrants and lamp posts. They have a large establishment and employ from 150 to 200 hands, and are usually full of work. There are also two or three plate, sheet and bar mills, and smaller concerns engaged in the manufacture of steam engines and general machinery. The total number of hands permanently engaged in the above branches may be safely placed at 5000 to 6000, besides which there are about 1000 engaged in the manufacture of hardware.



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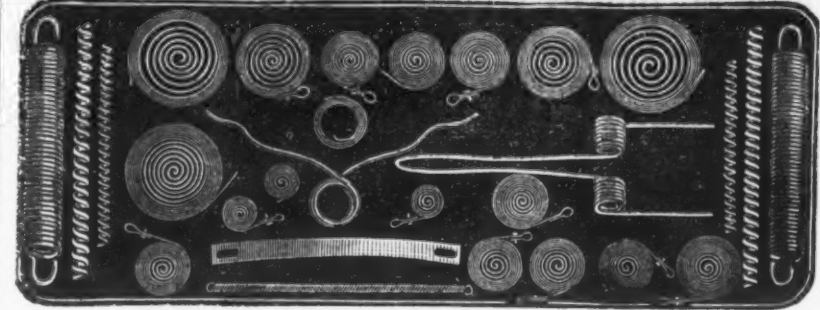
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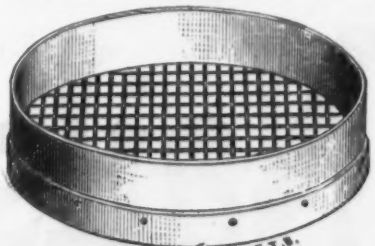
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**Water Power in the United States.**

Mr. Jas. B. Francis, President of the American Society of Civil Engineers, in his address before the convention at Montreal, spoke as follows on the water power of the United States. As no one is better qualified to present the subject than he, his paper will be read with interest:

Water power in many of the States is abundant, and contributes largely to their prosperity. Its proper development calls for the services of the civil engineer, and as it is the branch of the profession with which I am most familiar, I propose to offer a few remarks on the subject. The earliest applications were to grist and saw mills; carding and fulling mills soon followed. These were essential to the comfort of the early settlers, who relied on home industries for shelter, food and clothing; but with the progress of the country came other requirements. The earliest application of water power to general manufacturing purposes appears to have been at Paterson, N. J., where "The Society for Establishing Useful Manufactures," was formed in the year 1791. The Passaic River, at this point, furnishes, when at a minimum, about 1100 horse-power, continuously night and day. The water power of Lowell, Mass., was begun to be improved for general manufacturing purposes in 1822. The Merrimack River at this point has a fall of 35 feet, and furnishes, at a minimum, about 10,000 horse power during the usual working hours. At Cohoes, in the State of New York, the Mohawk River has a fall of about 105 feet, which was brought into use systematically very soon after that at Lowell, and could furnish about 14,000 horse-power during the usual working hours, but the works are so arranged that part of the power is not available at present. At Manchester, N. H., the present works were commenced in 1835. The Merrimack River at this point has a fall of about 52 feet, and furnishes, at a minimum, about 10,000 horse-power during the usual working hours. At Lawrence, Mass., the Essex Company built a dam across the Merrimack River, commencing in 1845, and making a fall of 28 feet, and a minimum power, during the usual working hours, of about 10,000 horse-power. At Holyoke, Mass., the Hadley Falls Company commenced their works about 1845 for developing the power of the Connecticut River at that point, where there is a fall of about 50 feet at a minimum of about 17,000 horse-power during the usual working hours. At Lewiston, Me., the fall in the Androscoggin River is about 50 feet; its systematic development was commenced about 1845, and with the improvement of the large natural reservoirs at the head waters of the river now in progress, it is expected that a minimum power, during the usual working hours, of 11,000 horse-power will be obtained. At Birmingham, Conn., the Housatonic Water Company have developed the water power of the Housatonic River by a dam giving 22 feet fall, furnishing at a minimum about 1,000 horse-power during the usual working hours. The Dundee Water and Land Company, about 1853, developed the power of the Passaic River at Passaic, N. J., where there is a fall of about 22 feet, giving a minimum power, during the usual working hours, of about 900 horse-power. The Turner's Falls Company, in 1866, commenced the development of the power of the Connecticut River at Turner's Falls, which is about 35 feet, and furnishes a minimum power, during the working hours, of about 10,000 horse-power. I have named the above water-powers as being developed in a systematic manner from their inception, and of which I have been able to obtain some data. In the usual process of developing a large water-power, a company is formed who acquire a title to the property, embracing the land necessary for the site of a town to accommodate the population which is sure to gather around an improved water-power. The dam and canals or races are constructed, and mill sites, with accompanying rights to the use of the water, are granted, usually by perpetual leases subject to annual rents. This method of developing water-power is distinctly an American idea, and the only instance where it has been attempted abroad, that I know of, is at Bellegarde, in France, where there is a fall in the Rhone of about 33 feet. Within the last few years, works have been constructed for its development, furnishing a large amount of power, but from the great outlay incurred in acquiring the titles to the property, and other difficulties, it has not been a financial success. The water powers I have named are but a small fraction of the whole amount existing in the United States and the adjoining Dominion of Canada. There is Niagara with its two or three millions of horse-power; the St. Lawrence with its succession of falls from Lake Ontario to Montreal; the falls of St. Anthony, at Minneapolis, and many other falls, with large volumes of water, on the Upper Mississippi and its branches. It would be a long story to name even the large water powers, and the smaller ones are almost innumerable. In the State of Maine a survey of the water power has recently been made, the result, as stated in the official report, being "between one and two millions of horse-powers," part of which will probably not be available. There is an elevated region in the northern part of the South Atlantic States, exceeding in area 100,000 square miles, in which there is a vast amount of water power, and being near the cotton fields, with a fine climate, free from malaria, its only needs are railways, capital and population to become a great manufacturing section. The design and construction of the works for developing a large water power, together with the necessary arrangements for utilizing it and providing for its subdivision among the parties entitled to it, according to their respective rights, affords an extensive field for civil engineers, and, in view of the vast amount of it yet undeveloped, but which, with the increase of population and the constantly increasing demand for mechanical power as a substitute for hand-labor must come into use, the field must continue to enlarge for a long time to come. There are many cases in which the power of a waterfall can be made available by means of compressed air, more conveniently than by the ordinary motors. The fall may be too small to be utilized by the

ordinary motors; the site where the power is wanted may be too distant from the waterfall, or it may be desired to distribute the power in small amounts at distant points. A method of compressing air by means of a fall of water has been devised by Mr. Joseph E. Frizell, C. E., of St. Paul, Minn., which, from the extreme simplicity of the apparatus, promises to find useful application. The principle on which it operates is by carrying the air in small bubbles in a current of water down a vertical shaft to the depth giving the desired compression, then through a horizontal passage, in which the bubbles rise into a reservoir near the top of this passage, the water passing on and rising in another vertical or inclined passage, at the top of which it is discharged, of course, at a lower level than it entered the first shaft. The formation at waterfalls is usually rock, which would enable the passages and the reservoir for collecting the compressed air to be formed by simple excavations, with no other apparatus than that required to charge the descending column of water with the bubbles of air, which can be done by throwing the water into violent commotion at its entrance, and a pipe and valve for the delivery of the air from the reservoir. The transfer of power by electricity is one of the problems now engaging the attention of electricians, and it is now done in Europe in a small way. Sir William Thompson stated in evidence before an English Parliamentary Committee, two years ago, that he looked "forward to the Falls of Niagara being extensively used for the production of light and mechanical power over a large area of North America," and that a copper wire,  $\frac{1}{2}$  inch in diameter, would transmit 21,000 horse-power from Niagara to Montreal, Boston, New York or Philadelphia. His statements appear to have been based on theoretical considerations, but there is no longer any doubt as to the possibility of transferring power in this manner; its practicability for industrial purposes must be determined by trial. Dr. Paget Higgs, a distinguished English electrician, is now experimenting upon it in the city of New York. Great improvements in reaction water wheels have been made in the United States within the last 40 years. In the year 1843 the late Uriah Atherton Boyden, a civil engineer, of Massachusetts, commenced the design and construction of Fourneyron turbines in which he introduced various improvements and a general perfection of form and workmanship which enabled a larger percentage of the theoretical power of the water to be utilized than had been previously obtained. The great results obtained by Boyden with water wheels, made in his perfect manner, and, in some instances, almost regardless of cost, undoubtedly stimulated others to attempt to approximate to those results at less cost, and there are now many forms of wheel at low cost, giving fully double the power, with the same consumption of water, that was obtained from most of the other forms of wheels of the same class.

A frequent inconvenience in the use of water power in cold climates is that peculiar form of ice called anchor or ground ice. It adheres to stones, gravel, wood and other substances forming the beds of streams, the channels and conduits of orifices through which water is drawn; sometimes raising the level of water courses many feet by its accumulation on the bed, and entirely closing small orifices through which water is drawn for industrial purposes. I have been for many years in a position to observe its effects and the conditions under which it is formed. The essential conditions are that the temperature of the water is at its freezing point, and that of the air below that point; the surface of the water must be exposed to the air and there must be a current in the water. The ice is formed in small needles on the surface, which would remain there and form a sheet if the surface was not too much agitated by a current or movement in the body of water sufficient to maintain it in a constant state of intermixture. Even when flowing in a regular channel there is a continued interchange of position of the different parts of a stream, the retardation of the bed causes variations in the velocity, which produce whirls and eddies and a general instability in the movement of the water in different parts of the section, the result being that the water at the bottom soon finds its way to the surface, and the reverse. I found by experiments on straight canals, in earth and masonry, that colored water discharged at the bottom reached the surface at distances varying from 10 to 30 times the depth. In natural water courses, in which the beds are always more or less irregular, the disturbance would be much greater. The result is that the water at the surface of a running stream does not remain there, and when it leaves the surface it carries with it the needles of ice, the specific gravity of which differs but little from that of the water, which, combined with their small size, allows them to be carried by the current of water in any direction. The converse effect takes place in muddy streams. The mud is apparently held in suspension, but is only prevented from subsiding by the constant intermixture of the different parts of the stream; when the current ceases the mud sinks to the bottom; the earthy particles composing it, being heavier than water, would sink in still water in times inversely proportional to their size and specific gravity. This, I think, is a satisfactory explanation of the manner in which the ice formed at the surface finds its way to the bottom. Its adherence to the bottom, I think, is explained by the phenomenon of regelation first observed by Faraday. He found that when the wetted surfaces of two pieces of ice were pressed together they froze together, and that this took place under water, even when above the freezing point. Prof. J. O. Forbes found that the same thing occurred by mere contact without pressure, and that ice would become attached to other substances in a similar manner. Regelation was observed by these philosophers in carefully arranged experiments with prepared surfaces, fitting together accurately, and kept in contact sufficiently long to allow the freezing together to take place. In nature these favorable conditions would seldom occur in the masses of ice commonly observed, but we must admit, on the evidence of the



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These Shoes are made of superior iron and steel,  
completely finished and ready for cold shoeing;  
have clip and solid calk. The holes are  
punched through at the proper angles and free  
from burrs. Same number of Shoes per keg as in  
kegs of unfinished shoes.

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kegs of unfinished shoes.

recorded experiments, that, under par-  
ticular circumstances, pieces of ice will  
freeze together or adhere to other substances  
in situations where there can be no abstrac-  
tion of heat. When a piece of ice of con-  
siderable size comes in contact under water  
with ice or other substance, it would usually  
touch in an area very small in proportion to  
its mass, and other forces acting upon it,  
and tending to move it, would usually exceed  
the freezing force, and regelation would  
not take place. In the minute needles  
formed at the surface of the water the ten-  
dency to adhere would be much the same as  
in larger masses touching at points only,  
while the external forces acting upon them  
would be extremely small in proportion, and  
regelation would often occur, and of the im-  
mense number of the needles of ice formed  
at the surface, enough would adhere to pro-  
duce the effect which we observe and call  
anchor ice. The adherence of the ice to the  
bed of the stream or other objects is always  
down stream from the place where they are  
formed; in large streams it is frequently  
many miles below; a large part of them do  
not become fixed, but as they come in con-  
tact with each other regelate and form  
spongy masses, often of considerable size,  
which drift along with the current and are  
often troublesome impediments to the use of  
water-power. Water powers supplied directly  
from ponds or rivers or canals, frozen over  
for a long distance immediately above the  
places from which the water is drawn, are  
not usually troubled with anchor ice, which,  
as I have stated, requires open water, up-  
stream, for its formation.

**The Climax Barrel Tank Attachment.**

We show in the accompanying illustration  
a very useful and practical device, which  
will commend itself to manufacturers and to  
dealers in oils or other barreled fluids. It is  
manufactured by Hancock & Maule, 243 and  
245 South Third street, Philadelphia, and is  
intended to be attached to the head of a  
barrel or cask of any kind, thereby convert-  
ing it into a temporary tank. It is fitted  
with a very effective pump, a suitable drip-



tray and strainer, so that, while the filling  
of any small vessel is easily and safely  
effected, any overflow or drip will be  
returned to the barrel. A case of stout gal-  
vanized iron, fitted with a cover provided  
with a lock, incloses all working parts and  
gives the owner control of the contents of the  
barrel. This device will be found of value in  
all establishments where oils are used, as well  
as in all warehouses and stores where fluids  
are sold. It is simple, durable and inex-  
pensive.

**The Pittsburgh Suspension Bridge.**  
—The suspension bridge connecting Pitts-  
burgh and Allegheny, which was partially  
destroyed by fire recently, was a struc-  
ture of some importance in the history of  
bridges. The suspension bridge, which  
replaced an old covered wooden structure,  
was finished in 1860, and was considered the  
finest in the world. The builder, Roebling,  
had not then acquired the European celeb-  
rity which came from the erection of the  
Cincinnati and Covington Bridge. Mr.  
Roebling had a carte blanche to do as he saw  
fit, though he submitted all his projects to  
the company as he went along, and they  
were all indorsed. So perfect was the work  
considered that when the Prince of Wales  
and suite were here they were astonished to  
find such a work of art in what was then a  
rather small provincial town. The Duke of  
Newcastle, who was a very practical man,  
scrutinized the bridge closely, and informed  
the Prince that it was the best bridge he  
had ever seen. Before the war a dollar  
went a long way, and what cost \$300,000  
then would cost \$500,000 now. Roebling,  
the builder, when asked what was the  
strength of the bridge, said he had ascer-  
tained the power of the greatest hurricane  
that ever passed over Pittsburgh prior to  
1858, and multiplied this by nine, which  
represented the strength of the bridge.  
President Harper says such power gave the  
company sufficient confidence in the power  
of the structure to resist pressure that no in-  
surance against flood damage was consid-  
ered necessary, especially as the bridge  
had been put 5 feet above the flood mark of  
1832. It was considered almost impossible  
to set the bridge on fire, so since 1859 it has  
carried no insurance of any kind, and the  
company not only must stand the loss of  
several weeks' wagon travel, but must repair  
the damage themselves out of their accumu-  
lations.

Another scheme for crossing the English  
Channel by railway has just appeared. The  
originator is Mr. Bradford Leslie, the engi-  
neer of the East India Railway Company,  
who boldly proposes to travel into France  
through a cylindrical steel tube submerged  
40 feet below the surface of the water. The  
tube would be so ballasted as to make it  
weigh 1½ tons to the foot less than the  
water displaced, its buoyancy being coun-  
terbalanced by moorings at every 250 feet. At  
the shore ends it would be laid in dredged or  
excavated channels, and would be made to  
rise from the mid-channel depths by easy  
gradients. The cost of carrying out this  
scheme is estimated at \$3,000,000.



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**Iron & Steel.****COMMON & REFINED IRON,**  
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**ULSTER IRON**A full assortment of all sizes constantly on hand.  
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Band, Hoop, and Scroll Iron,  
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Norway Nail Rods,  
Cast, Spring and Tire Steel, etc.**A. R. WHITNEY,**  
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Naylor & Co., Boston, Mass., Homogeneous  
Steel Plates and Compressed Steel  
Shafting.Plans and estimates furnished, and contracts  
made for erecting Iron Structures of every descrip-  
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Sample pieces at office. Please address  
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Wrought & Cast Scrap Iron,  
**OLD METALS.**457 & 459 Water St.,  
233 & 235 South St., NEW YORK.**DANIEL F. COONEY,**  
Late of and Successor to Jas. H. Holdane & Co.,  
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LAP WELDED BOILER FLUES,  
Boiler Rivets, Angle & T Iron, Cut Nails & Spikes.  
Agency for Pottstown Iron Co., Viaduct Iron Works,  
Lebanon Rolling Mills, Pine Iron Works, Laurel Iron  
Works, The Bergen Rolling Mills at Jersey City, Glas-  
gow Iron Co.**SWEDISH IRON.**  
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iron. Fire Box Iron a specialty.**ROME MERCHANT IRON MILLS,**  
ROME, N. Y.,Manufacturers of the best grade of  
Bar Iron, Bands and Fine Hoops.  
Scrolls, Ovals, Half Ovals, Half Rounds, Hexagon and  
Horse Shoe Iron. Also from Charcoal Pig a superior  
quality of iron branded J. G. All puddled balls re-  
duced by hammer. Orders may be sent to the Mill or  
to J. O. CARPENTER, our Agent, at 59 John  
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**IRON AND STEEL RAILS, OLD RAILS.**  
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Agent for Otto's celebrated Cast Steel Boiler Plates,  
The Coatesville Iron Co., Pottstown Iron Co., The  
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Iron Beams, Angles, Tees, Rivets, &c.**HUGH W. ADAMS & CO.,**  
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Broker in Machinery & IronAgent for  
**FORSTER'S CRUSHER & PULVERIZER,**  
The best in market.**W. S. MIDDLETON, 52 John St., N. Y.****S. A. LISSBERGER,**  
**IRON & METAL DEALER,**  
509, 511 and 513 to 519 East 10th St., New York.have on hand, and offer for sale, the following:  
Scotch and American Pig Iron, Wrought, Cast  
and Machinery Scrap Iron, Car Wheels, Axles and  
Heavy Wrought Iron; also, Old Copper, Composi-  
tion, Brass, Lead, Pewter, Zinc, &c.**DANIEL W. RICHARDS & CO.,**  
FOREIGN AND DOMESTIC  
**SCRAP IRON, STEEL, RAILS AND METALS,**

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**PASSAIC ROLLING MILL CO.,**  
Manufacture and have always in stock  
**ROLLED IRON BEAMS,**  
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gings, Eye Bars, &c.  
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Hot Pressed Nuts, Bolts, Washers, &c.  
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Iron.

NEW YORK.

**JOHN W. QUINCY & CO.,**  
98 William Street, New York.  
**Anthracite & Charcoal Pig Irons,**  
Wrought Scrap, Cut Nails, Copper,  
BLOCK TIN, LEAD, SELLER, ANTIMONY, NICKEL, &c.**HARRISON & GILLOON**  
**IRON AND METAL DEALERS,**  
558, 560, 562 WATER ST., and 302, 304, 306 CHERRY ST.,  
NEW YORK.have on hand, and offer for sale, the following:  
Scotch and American Pig Iron, Wrought, Cast and  
Machinery Scrap Iron, Car-Wheels, Axles and Heavy  
Wrought Iron; also old Copper, Composition, Brass,  
Lead, Pewter, Zinc, &c.**OXFORD IRON CO.,**  
(B. G. CLARKE, Receiver.)**Cut Nails**  
AND  
**SPIKES.****J. S. SCRANTON, Sales Agent,**  
51, 53 and 55 Washington Street,  
NEW YORK.**BURDEN'S**  
**HORSE SHOES.****"Burden Best"**  
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**Boiler Rivets.****Burden Iron Works, H. Burden & Sons,**  
Troy, N. Y.**EGLESTON BROS. & CO.,**  
166 South Street, NEW YORK CITY.  
267 Front Street,**BURDEN'S**  
**H. B. & S.**  
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**ULSTER BAR IRON.**All sizes and shapes in stock.  
Also Best Grades of**Am. & Eng. Ref'd Iron, Common Iron, &c**  
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**SCOTCH PIG IRON.**For spot delivery and for prompt or forward  
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Baltimore or New Orleans.

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We wish to call particular attention to our D. B. G. special Crane Chain, made of an extra  
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These Shoes are made of superior iron and steel,  
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have clip and solid steel calk. The holes are  
punched through at the proper angles and free  
from burrs. Same number of Shoes per keg as in  
kegs of unfinished shoes.

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punched through at the proper angles and free  
from burrs. Same number of Shoes per keg as in  
kegs of unfinished shoes.

recorded experiments, that, under particular circumstances, pieces of ice will freeze together or adhere to other substances in situations where there can be no abstraction of heat. When a piece of ice of considerable size comes in contact under water with ice or other substance, it would usually touch in an area very small in proportion to its mass, and other forces acting upon it, and tending to move it, would usually exceed the freezing force, and regelation would not take place. In the minute needles formed at the surface of the water the tendency to adhere would be much the same as in larger masses touching at points only, while the external forces acting upon them would be extremely small in proportion, and regelation would often occur, and of the immense number of the needles of ice formed at the surface, enough would adhere to produce the effect which we observe and call anchor ice. The adherence of the ice to the bed of the stream or other objects is always down stream from the place where they are formed; in large streams it is frequently many miles below; a large part of them do not become fixed, but as they come in contact with each other regelate and form spongy masses, often of considerable size, which drift along with the current and are often troublesome impediments to the use of water-power. Water powers supplied directly from ponds or rivers or canals, frozen over for a long distance immediately above the places from which the water is drawn, are not usually troubled with anchor ice, which, as I have stated, requires open water, upstream, for its formation.

#### The Climax Barrel Tank Attachment.

We show in the accompanying illustration a very useful and practical device, which will commend itself to manufacturers and to dealers in oils or other barreled fluids. It is manufactured by Hancock & Mauls, 243 and 245 South Third street, Philadelphia, and is intended to be attached to the head of a barrel or cask of any kind, thereby converting it into a temporary tank. It is fitted with a very effective pump, a suitable drip-



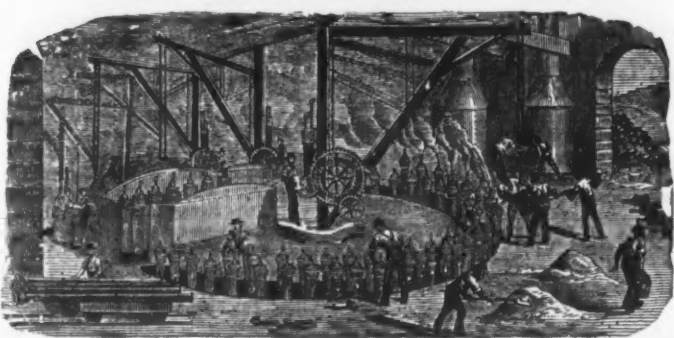
tray and strainer, so that, while the filling of any small vessel is easily and safely effected, any overflow or drip will be returned to the barrel. A case of stout galvanized iron, fitted with a cover provided with a lock, incloses all working parts and gives the owner control of the contents of the barrel. This device will be found of value in all establishments where oils are used, as well as in all warehouses and stores where fluids are sold. It is simple, durable and inexpensive.

**The Pittsburgh Suspension Bridge.**  
—The suspension bridge connecting Pittsburgh and Allegheny, which was partially destroyed by fire recently, was a structure of some importance in the history of bridges. The suspension bridge, which replaced an old covered wooden structure, was finished in 1860, and was considered the finest in the world. The builder, Roebling, had not then acquired the European celebrity which came from the erection of the Cincinnati and Covington Bridge. Mr. Roebling had a carte blanche to do as he saw fit, though he submitted all his projects to the company as he went along, and they were all indorsed. So perfect was the work considered that when the Prince of Wales and suite were here they were astonished to find such a work of art in what was then a rather small provincial town. The Duke of Newcastle, who was a very practical man, scrutinized the bridge closely, and informed the Prince that it was the best bridge he had ever seen. Before the war a dollar went a long way, and what cost \$300,000 then would cost \$500,000 now. Roebling, the builder, when asked what was the strength of the bridge, said he had ascertained the power of the greatest hurricane that ever passed over Pittsburgh prior to 1858, and multiplied this by nine, which represented the strength of the bridge. President Harper says such power gave the company sufficient confidence in the power of the structure to resist pressure that no insurance against flood damage was considered necessary, especially as the bridge had been put 5 feet above the flood mark of 1832. It was considered almost impossible to set the bridge on fire, so since 1859 it has carried no insurance of any kind, and the company not only must stand the loss of several weeks' wagon travel, but must repair the damage themselves out of their accumulations.

Another scheme for crossing the English Channel by railway has just appeared. The originator is Mr. Bradford Leslie, the engineer of the East India Railway Company, who boldly proposes to travel into France through a cylindrical steel tube submerged 40 feet below the surface of the water. The tube would be so ballasted as to make it weigh 1½ tons to the foot less than the water displaced, its buoyancy being counterbalanced by moorings at every 250 feet. At the shore ends it would be laid in dredged or excavated channels, and would be made to rise from the mid-channel depths by easy gradients. The cost of carrying out this scheme is estimated at \$5,000,000.



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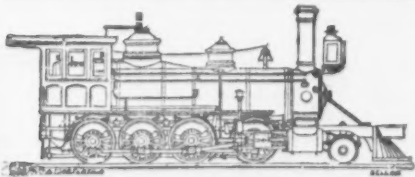
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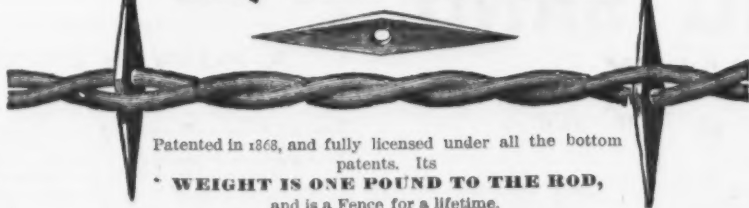
Eighty cases of this Best Quality Cast Steel, to close a consignment, in quantities as required, at less than market rates, in Octagon,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{16}$ ,  $\frac{1}{8}$ ,  $\frac{1}{16}$ ,  $\frac{1}{32}$  in.; Rock Drill do.,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{16}$ ,  $\frac{1}{8}$ ,  $\frac{1}{16}$ ,  $\frac{1}{32}$  in.; Square C. S.,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{16}$ ,  $\frac{1}{8}$ ,  $\frac{1}{16}$ ,  $\frac{1}{32}$  in.; Round (hammered then rolled),  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{16}$ ,  $\frac{1}{8}$ ,  $\frac{1}{16}$ ,  $\frac{1}{32}$  in.; Hexagon,  $\frac{3}{4}$  to  $\frac{1}{32}$  in.; 75 bars Flat,  $\frac{3}{4}$  x  $\frac{1}{2}$  to  $\frac{1}{8}$  x  $\frac{1}{16}$  in. This Steel is all of best quality and will be sold low.

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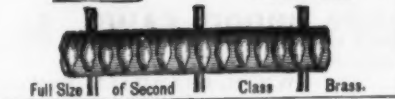
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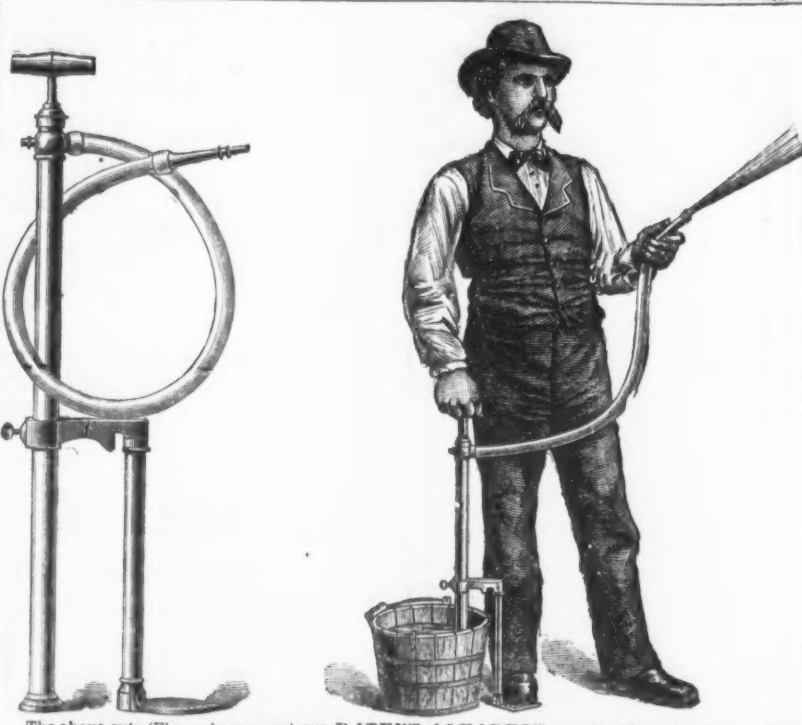
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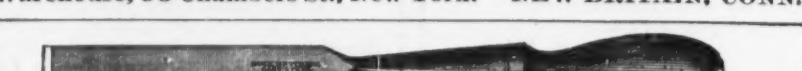
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Protoxide of Iron.....	.83
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Silica.....	14.59
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Total.....	99.44

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## Process of Manufacturing Cast-Iron Cannon Upon the Rodman Plan.

All heavy cast-iron cannon manufactured for the land service of the United States are cast upon the Rodman plan. This plan consists in cooling the casting from the interior, and is effected by the insertion of a hollow core in the center of the mold cavity, through which a stream of water or current of air circulates, carrying off the internal heat. The radiation of heat from the exterior of the casting is meanwhile retarded by keeping the outside of the flask hot with surrounding fires. Extensive trials have demonstrated the superiority of cannon cast on this plan over those which are cast solid. The several operations in the manufacture of cast-iron cannon are molding, casting, cooling and finishing.

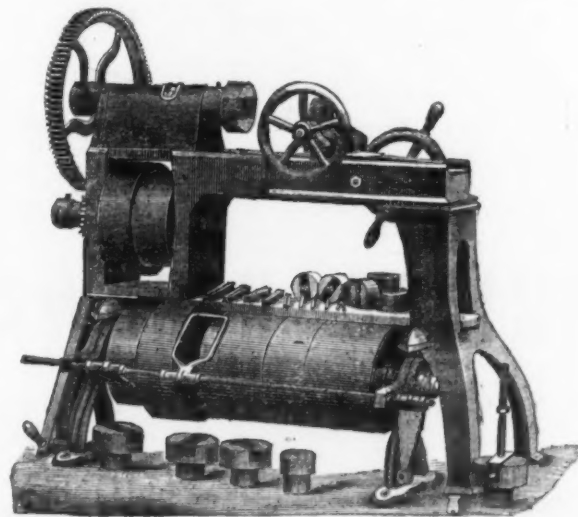
**Molding.**—Molding is the process by which a cavity of the form of the gun is obtained by imbedding a model in sand and then withdrawing it. The model of a gun, technically termed the pattern, is usually constructed of wood, made in as many sections and parts as may be necessary to admit of its being easily withdrawn from the mold. The sections of the pattern for the breech and reinforce are made with diameters exceeding very slightly those of the finished gun, while the diameters of the sections for the chase are largely in excess. The breech section is provided with a cascabel for supporting the gun in the lathe while being turned and bored. The patterns of the trunnions are attached in their places by wooden pins, which can be easily withdrawn when it becomes necessary to detach the patterns. The several sections of the pattern for the body of the gun are made with a slight taper to facilitate their withdrawal. The pattern for the chase of the gun is made considerably longer than the required length of that part, to provide a "sinking head" which, when the gun is cast, receives the scoria of the melted metal as it rises to the surface, and also furnishes the metal required to feed the shrinkage caused by the cooling of the casting.

The mold is formed in a cast-iron case called a flask, which is usually made in sections corresponding in number and length to those of the pattern. These sections consist of two pieces, which, when united, are circular in cross section, excepting two slight enlargements opposite each other for the formation of the channels or "side gates" for the metal to pass down. The pieces are flanged at the edges, fastened by bolts, and additionally secured by clamps over the flanges. The trunnion sections of the flask are fitted with trunnion boxes which have movable plates at their ends for the purpose of introducing the trunnion patterns and facilitating the formation of that part of the mold. To form the mold the lower or breech section of the flask is placed upon an iron plate in an upright position, the corresponding section of the pattern introduced and centered; the space between the pattern and the flask filled with molding composition, which is rammed down in thin layers around the patterns until the section is completed. The patterns for the side gates and their branches for conveying the metal into the mold are introduced as the work progresses. After the mold for the lower section is finished, the next section of the flask is placed upon it and secured, the corresponding section of the pattern introduced, fitted with dowels, which enter the breech section and hold it accurately in place. The molding is continued with this section as with the first, and when completed it is lifted off, the pattern being left in the mold. The third section of the flask, which is usually the trunnion section, is then placed upon the second and secured, and the pattern adjusted in the same way as before. The trunnion patterns are attached, and the molding is continued. When this section is completed, the pins attaching the trunnion patterns are removed and the patterns withdrawn. The formation of the remaining sections is continued until the whole is completed, thus insuring a perfect mold throughout, free from irregularities at the junction of the sections. Care is taken to sprinkle dry sand upon the surface of each section of the mold before continuing the work, to prevent adhesion and to admit of the sections being separated without injury. As the work upon the respective sections is finished the patterns are withdrawn. If any portions of the mold are injured in the withdrawal they are repaired. The several sections are placed in the drying oven, where a moderate heat is kept up until thoroughly dried. They are then removed from the oven, and a wash, composed of German graphite, pulverized anthracite coal and distillery returns, applied to the interior surface of the mold. The sections are replaced in the oven, and when dried removed, and a second coating of the wash applied while the mold is still warm. This wash is to produce a smooth, hard surface. It prevents the melted metal from mixing with the sand of the mold and forming protuberances on the surface of the casting.

The core-barrel or arbor consists of a water-tight cast-iron tube, made sufficiently thick to withstand the pressure of the metal in the mold. Its length and diameter are such as to leave a sufficient surplus of metal in the bore of the gun to secure a good finish. It is constructed with a slight taper to facilitate its withdrawal after the casting. The lower end is rounded off and is fitted with several iron pins for securing the extremity of the rope, which is used as wrapping material in the preparation of the core; the exterior of the barrel is fluted from top to bottom to allow the escape of the gases generated by its combustion. Before being used the core-barrel is always subjected to a powerful water-pressure to test its soundness. To prepare the core for casting, journals are fitted at its extremities. It is then placed in a horizontal position upon an iron truck, supported by the journals resting in bearings, and turned by a crank attached to one of the journals. It is first wrapped with white hemp rope so as to cover all of the exterior surface in contact with the melted metal in the mold. Over this a coating of molding composition is applied quite wet, wrapped with twine or wire to insure its adhering. When the composition has partially dried another thin coating is applied and the surface rendered smooth and even by revolving the core in contact with a straight edge resting on the truck. The truck with the core is then rolled into the drying oven. When the composition is dried the core is removed from the oven and a coating of the same wash again applied. It is again replaced in the oven until thoroughly dry, when it is removed and the journals taken out. The one at the bottom is replaced by a tight-fitting screw plug, covered over with molding composition. The top is fitted with a water-tight cap, so constructed as to receive the conducting pipes for the water, and is ready for use.

The pit, as usually constructed for the casting of guns on the Rodman plan, is cylindrical in form and is surrounded with a brick wall, built in offsets, affording supports for braces to steady the mold in position; grates are arranged around the circumference of the bottom for fires lighted immediately after the casting to retard the radiation of heat from the exterior of the mold. To retain the heat of the fires in the grates the mouth of the pit is covered with a close-fitting cover of boiler iron. For furnishing air to the fires, flues are made opening into the pit below the grates, while near the top another flue, connecting with a chimney, produces the necessary draught. If the pit has been out of use for any length of time, it is thoroughly dried by fires in the grates before placing the molds. To prepare the pit to receive the mold, the bottom is covered with a layer of sand. A heavy cast-iron plate is then laid down and carefully leveled. Upon this section the breech section of the mold is placed in an upright position. The other sections are successively lowered and secured in their places, the whole being braced from the sides of the pit to keep it in a vertical position. The core is then lowered into the mold of the gun. To center and secure it in position, a cast-iron frame, usually termed a "spider," is employed. The spider consists of a heavy ring supported upon three legs, each having a projection at the bottom fitted with an adjustable screw resting upon the upper flange of the flask. The core passes through the ring of the spider, is secured to it by bolts through the flange at the top of the barrel, and held firmly, so that any movement of the spider will produce a change in the position of the core. To center the core, a long wooden rod is used, to the end of which a piece of board is fixed to hold a light. The length of this projecting board, previously determined, is the distance which the core should be, when in the center, from the mold at its maximum diameter. Having adjusted the core in the mold by means of the screws in the legs of the spider, it is firmly secured in its position by clamps made to fit under the flange at the top of the flask and over the projections at the end of the legs of the spider. The fuel for the fires in the pit is arranged on the grates in readiness to be kindled.

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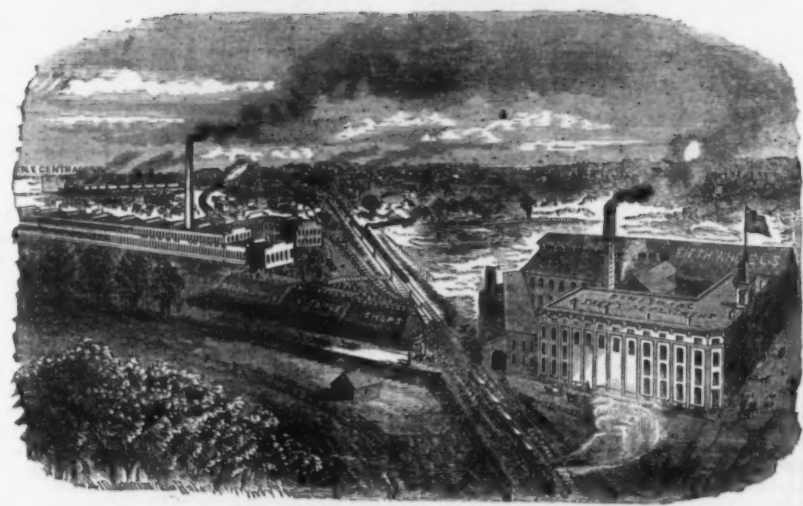
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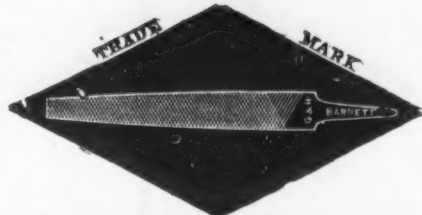
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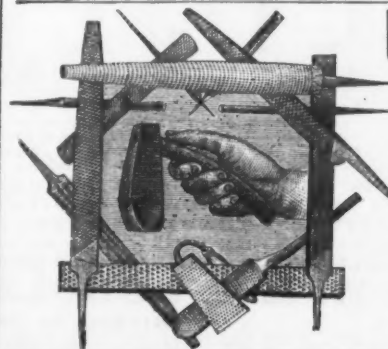
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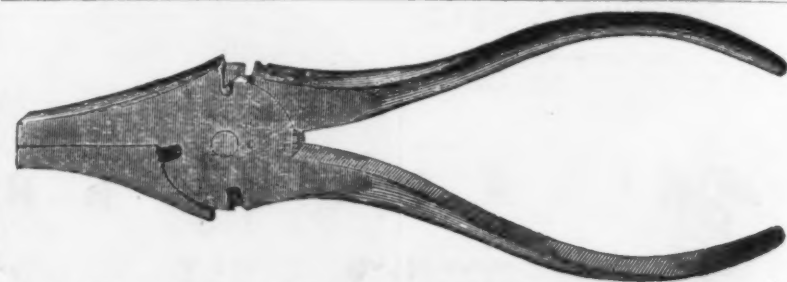
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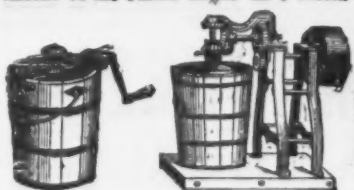
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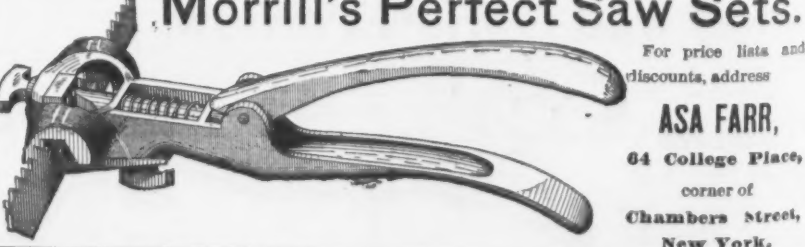
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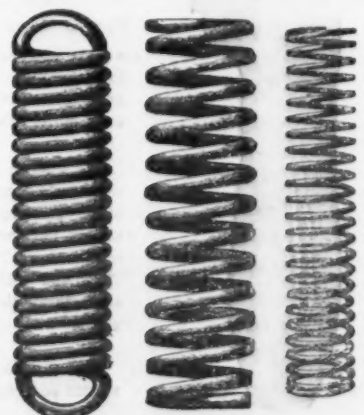
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in reverberatory air furnaces, two or three being sometimes required for casting the heavier guns. The different grades of iron to be used for the heat are weighed and piled in proper proportions in the metal chamber. Care should be taken to have the furnace perfectly dry throughout. When it has been out of use long enough to become damp, it should be dried by a fire in the fire chamber before being charged. When two or more furnaces are used in casting a gun, the tap-holes are connected by troughs with a reservoir called a mixing basin, in which the different charges are thoroughly mixed before entering the mold. The furnaces being charged and everything in readiness, the fires are started and regulated so that the iron in all will be melted or "down," as near as practicable, at the same time. The length of time required to obtain complete fusion depends in great measure upon the state of the atmosphere and quantity of metal in the charge; it may vary from five to twelve hours. When the charge is nearly down, wooden poles or iron rods are inserted in holes provided for that purpose in the walls of the furnaces, and the melted metal frequently stirred or puddled to bring the unmelted lumps in contact with the flame. As soon as the charge of a furnace is ascertained to be fairly down, specimens are taken out to determine whether the iron is sufficiently decarbonized or "high" to be in a proper condition for casting. These specimens are cast in green sand molds and broken as soon as they become cold. The condition of the iron is indicated by the appearance of the fracture, and varies so much with different brands used that its determination is largely a matter of experience. If the first specimens show insufficient decarbonization, the iron is kept in fusion still longer and the puddling process is continued. When it is found that the decarbonization has gone far enough, the puddling is stopped. As the density and tensile strength of the iron depend in a great measure upon the highness to which it is brought, a correct decision is very important.

As soon as the melted metal in all the furnaces is found to be in proper condition for casting, the furnaces are tapped simultaneously and the metal conducted by troughs to the mixing basin, where the several charges are thoroughly mixed. It then flows on through other troughs connecting with the side gates of the mold, and, passing down, enters the mold cavity by the branches. These branches connect with the side gates at regular intervals, and are so constructed that the metal enters in a horizontal direction toward the axis of the mold cavity. The surface of the metal, as it enters, is stirred to prevent the scoria from lodging; care should be taken not to give it a "swirl," which throws the lightest metal in around the core where the heaviest and best should be. When the mold is filled, the tap-holes of the furnaces are closed, and the surface of the metal in the sinking head is covered with a layer of charcoal to prevent its chilling. For two or three hours after the casting, more metal is added at short intervals of time, to feed the shrinkage, by pouring from a ladle at the top of the mold as the surface sinks.

Cooling.—The water for cooling the gun is conducted into the core by means of a metallic tube, which passes through a watertight joint in the center of the cap and extends to within a few inches of the bottom of the barrel. The water consequently passes into the core at the bottom and ascends until it reaches the escape pipe and is discharged. The flow of the water commences as soon as the furnaces are tapped, and is regulated to produce, half an hour after the casting, a certain change of temperature, about 25 degrees, between entering and leaving the core. When this is effected the rate of flow remains constant until the core is removed.

As soon as possible after the casting the fire in the pit is kindled and kept up until the withdrawal of the core barrel; it is allowed to die out gradually. Meanwhile the mouth of the pit is kept closely covered. When the change of temperature of the out-flowing water has become constant or nearly so, the core barrel is withdrawn. To effect this, it is sometimes necessary to largely increase the flow of water for a short time, in order to contract the barrel enough to loosen it from the casting. As soon as this is effected the flow is stopped. The rope with which the barrel is wrapped takes fire from the heat of the casting and is consumed, leaving the barrel detached from the composition surrounding and allowing its withdrawal without difficulty. As soon as the core barrel is withdrawn the water is turned into the bore, being conveyed by the conducting pipe to the bottom and escaping by means of a tube cast into the gun head, entering the bore a few inches from the upper end of the casting. The rate of flow of the water through the bore is so regulated as to produce a change of about 100 degrees between entering and leaving at half an hour after the removal of the barrel. It is then allowed to remain constant until the gun becomes cool. The time occupied in cooling by this process varies from four to six days, according to the size of the gun; for a 20-inch gun a longer time may be required. In case the condition of the metal in the furnace before casting should indicate that a slower rate of cooling is desirable, the process of cooling by air is resorted to after the withdrawal of the core barrel. The current of air is furnished by a rotary blower driven by steam or water power, and is conducted into the gun by a sheet-iron pipe, which extends to within a short distance of the bottom of the bore. Cooling by this process usually requires two or three days more than by the water process.

Finishing.—When the casting has become cool it is hoisted from the pit, the flask being first taken off. The molding composition adhering to the interior or exterior is removed as far as practicable by scrapers and chisels. The casting is placed in a heading lathe, where the greater part of the surplus metal of the chase is removed and the sinking head is cut off. From the latter a ring is also cut off next to the muzzle of the gun, for the purpose of testing the initial strain, and from which specimens are afterward taken for tenacity and density. To place the gun in the lathe, the square knob of the cascabel

is fitted into the chuck attached to the machinery, which revolves the gun, while the sinking head is introduced into the "bonnet" which revolves in its bearing at the other extremity of the lathe. Both of these supports are provided with adjustable screws by means of which the gun is centered and held firmly in place. The breech is adjusted by placing a sharp-pointed instrument in the tool rest and bringing it in contact with the surface of the casting near the maximum diameter, and, while turning the gun, the screws in the chuck are moved until coincidence of the line around the gun is obtained. At the muzzle a bar of iron is laid upon blocks so that it shall be inside the bore and nearly in contact with the interior surface. As the gun turns, the distance between this point and the metal of the bore is observed and equalized approximately by the screws in the bonnet. A wooden disk, turned to fit the bore accurately, bearing a string attached to its center, is then pushed to the bottom of the bore and made to assume a position in a plane perpendicular to its axis. The string from the center of the disk is long enough to reach some distance outside of the muzzle, the outer end being made fast to an upright at the same height as the inner end or center of the disk. The string is now stretched perfectly taut and the gun again turned, a square being placed upon blocks about one foot in front of the muzzle close to the string, and, as the gun revolves, the distance, if any, which the string deviates from the square is observed and corrected by again moving the screws in the bonnet. When properly centered, the string will remain in the same position in the square and be the same distance from the interior surface of the gun throughout an entire revolution, showing that the axes of the gun and lathe coincide. With the hollow-cast gun it is necessary that it should be centered from the bore, as it sometimes happens that the axis of the bore and casting do not coincide. The gun being centered, all the measurements necessary for a proper commencement of the turning are made.

The turning of the gun commences near the muzzle. The rest in which the turning tool is placed is so constructed that it can be moved either parallel to or at right angles to the axis of the gun. The tool is brought in contact with the surface of the gun at the desired point, the metal being turned off as the gun revolves. In this way a series of narrow cuts are made in the chase at short intervals, extending in depth to within about 2 inches of the required exterior diameter of the gun. The intervening rings are then broken out with wedges, and the portion of the chase next the muzzle is turned down to the finished dimensions. Meanwhile the cylindrical part of the cascabel is turned down slightly to form, with the finished part of the chase, bearings for the gun when transferred to the boring lathe. The cuts at the muzzle for removing the sinking head and test ring are next made. When these cuts have reached a sufficient depth to admit of the separation, the gun is taken out of the lathe and placed upon skids, and the bonnet is removed from the sinking head. The ring and head together are then separated from the gun by inserting wedges at the muzzle, and the ring is afterward wedged off from the head. The gun is next placed in the boring lathe, in which it is supported by bearings at the chase and neck of cascabel. Its rotation in the lathe is effected by securing the square knob of the cascabel in the chuck attached to the revolving machinery in the same manner as in the heading lathe. To adjust the gun, the boring rod is first introduced a short distance into the bore, and the space between its exterior surfaces and the gun at the muzzle is observed. For this purpose a thin wooden gauge is used, pointed at one end and having a notch at the other, which takes the outer surface of the gun at the muzzle, the gauge being laid on the face of the muzzle, and therefore perpendicular to the axis of the bore. As the gun revolves, the distance above, below and on either side is observed, verifying the concentricity of the axis of the gun at the muzzle. The adjustment is completed at the breech by slackening the bolts of the cascabel bearing, leaving it free to move on the ways, and should any lateral motion be perceptible, it is corrected by adjusting the screws in the chuck, after which the concentricity is complete from breech to muzzle.

In boring, the tools or cutters are fitted into a cylindrical block called a "head," which is secured to the end of the boring rod. As the gun revolves in the lathe, the boring rod is made to advance by machinery until the cutters reach the bottom of the cylindrical part of the bore. From three to five cuts are usually required to secure a perfectly straight bore and enlarge it to its required diameter; the last one being made with a finishing tool or reamer. The bottom of the bore is then finished with tools of the required shape. During the process of boring the turning continues, and the exterior is finished except the trunnion section and the extremity of the breech where the cascabel attaches. The cascabel is turned down in front of the bearing so that it can be broken off when no longer required. To insure a smooth surface in the bore, the work upon the exterior of the gun is suspended while the finishing tools are being used.

The boring being completed, the dimensions of the bore of the gun are verified before removing it from the lathe. If found to be correct the gun is removed and placed in the trunnion lathe, where the trunnions are turned down to the finished dimensions. When adjusted in this lathe the axis of the gun is in a horizontal plane, the cascabel being supported by the breech center, and the chase by the muzzle bearing. The trunnion head consists of a hollow shaft, in which are placed the cutters for turning the trunnions. It is supported upon bearings which rest upon ways at right angles to the axis of the gun. These bearings are of such a height as to bring the axes of the trunnion head and gun in the same horizontal plane. In turning the trunnions the gun remains stationary while the trunnion head revolves about the trunnion. The cylindrical surface is first finished, the shaft moving toward the gun and its speed being regulated as circumstances require. To finish the face a



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eby cautions all purchasers of his Knives and  
Steels to be on the alert against such im-  
position.

JOHN WILSON also hereby gives Notice,  
that it is his determination to institute Legal  
Proceedings against any person or persons who  
may be detected infringing his Trade Mark.

Every article of JOHN WILSON'S manu-  
facture, bears the Trade Mark, in addition to  
the Name.

W. CLARK'S

## Patent English Clipper

No. 2,

for Heads and Barbers' Use. Has  
been before the public for many years, giv-  
ing universal satisfaction.

Warranted to Give a Clean Cut.

SOLD IN ALL PARTS OF AMERICA.

W. CLARK'S

## Patent English Clipper,

No. 1.

This Machine has been so exten-  
sively used by the public for nearly 12  
years that comment is unnecessary.

W. CLARK, 232 Oxford Street, London.

AGENTS WANTED.

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Hardware, Cutlery, &amp;c.,

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Sole Agents for

THIRLE & QUACK'S CELEBRATED CUTLERY.  
WADE BROS. AND TYLER & CO.'S CUTLERY.  
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WROUGHT IRON TACKLE BLOCKS.EADIE'S DIFFERENTIAL PULLEYS.  
PEUGEOT FRERES' FRENCH HORSE CLIPPERS.SPECIALTIES.  
WOSTENHOLM'S POCKET CUTLERY AND RAZORS.WADE & BUTCHER'S BENGAL AND GENUINE  
HAMBURG HOLLOW GROUND RAZORS.JOS. RODGERS & SONS' CUTLERY.  
GERMAN COIL AND HALTER CHAINS.PLYERS, NIPPERS AND TOOLS.  
CHESTERMAN'S TAPES.

Silver Medal, 1878-Paris.

Peugeot Freres' Barber's Clipper.

JOHN SPENCER &amp; SON,

Albion Steel Works, Sheffield,

MANUFACTURERS OF

## FILES

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## STEEL,

Table Knives, Razors, Shovels, &c., &c.,  
of every description.

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Table Knives, Razors, Shovels, &c., &c.,  
of every description.

Established in 1839.

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WORCESTER,

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Successors to

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Manufacturers of

THE GENUINE

COES

Screw

## Wrenches.

PATENTED,

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December 26, 1871.

December 28, 1875.

August 1, 1876.

The backstrain when the wrench is used is borne  
by the bar—not by the handle.

The strongest Wrench made, and the only suc-  
cessful Re-enforced Bar.

None genuine unless stamped

A. G. COES &amp; CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St.,  
New York, carry a full line of our goods, and will be  
pleased to serve you at factory prices.

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## GIRARD WRENCH.

WARRANTED.

FOR

STRENGTH

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Durability

IT HAS

NO SUPERIOR.

GUARANTEED

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EVERY RESPECT.

Wrought Bar, Head

and Screw.

Owing to the in-  
creased demand

for these justly

Popular Wrenches.

we are now manu-  
facturing more thanany other establish-  
ment in the world.Our Wrench hav-  
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ers, we have adopt-  
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after stamp all our

goods.

SEND FOR

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THE PATENT

## SCREW WINDOW BALANCE

With which the Sashes work as  
with weights, their application  
being at an expense of one-half  
the cost of applied weights, no  
boxings being required.

The Sashes are Locked with the meet-  
ing rail lock. Stands alone in its  
working. Price \$1 per set (four.)  
Discount to the trade. In use over  
three years. Robt. A. Haganin,  
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103 Reade Street, New York.

Manufacturers of and Wholesale Dealers in

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Splicers. Agent for Raymond's American Crane Oil

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Solid Cast-Steel Pump Augers

For Boring Pump Logs and Pump

Tubing, with all necessary fittings. Agency for

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and Lathes.



# HALL & ELTON'S GERMAN SILVER.



In addition to Spoons of this well-known brand, we are now prepared to furnish Forks of the same quality. We GUARANTEE these goods to be SOLID and of UNIFORM quality throughout, with no coatings to wear through or flake off, and with no liability to RUST.

HALL, ELTON & CO., Wallingford, Conn., and 75 Chambers St., New York.

## HOLMES, BOOTH & HAYDENS,

MANUFACTURERS OF

Finest Quality Silver-Plated Spoons, Forks, Knives, &c.



NOTICE.—We guarantee the base of our Spoons, Forks, &c., to be full 12 per cent. Nickel Silver, and extra heavily plated with pure Silver. Our goods are all hand burnished, and are first-class in every respect. We pack our Spoons and Forks one dozen in each box.

49 CHAMBERS ST., NEW YORK.      Factories, WATERBURY, CONN.      18 FEDERAL ST., BOSTON.

## T. G. CONWAY, 88 Chambers Street, New York,

Manufacturers' Agent for

REVOLVERS, BREECH-LOADING GUNS, TABLE CUTLERY, CAST IRON, NICKEL PLATED & STEEL SHEARS.

Representing THE LEE ARMS CO., C. S. SHATTUCK,

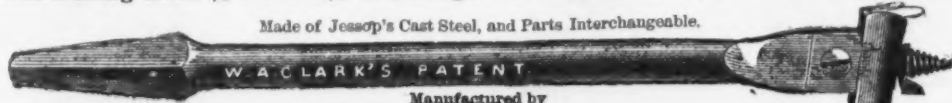
THE GREENFIELD CO-OP. WORKS, ATLAS WORKS,

J. K. RUPERTUS, THE MILLVILLE SHEAR CO.

## WM. A. CLARK'S PATENT EXPANSIVE BITS WITH TWO CUTTERS EACH.

Small Bit Boring from 1/4 in. to 1 1/2 in.; Large Bit Boring from 3/4 in. to 3 in. Warranted.

Made of Jessop's Cast Steel, and Parts Interchangeable.



R. H. BROWN & CO., Westville, Conn., Successors to W. A. CLARK.

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No. 24 Columbia Street, New York.

Maker and Patentee of the improved Hydraulic Jacks AND Punches.



Roller Tube Expanders and Direct Acting Steam Hammers. Communications by letter will receive prompt attention. Jacks for pressing on Car Wheels or Crank Pins made to order.

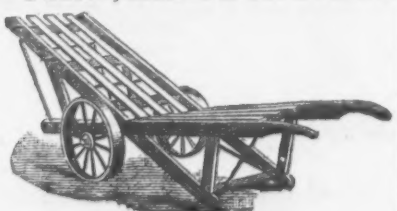
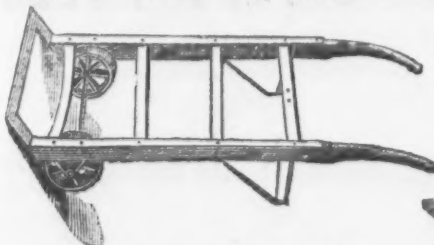


Our specialty. Also, Creting, Fencing and Vases, Rustic fixtures, matching Posts, door and Window Guards Wrought Iron Gratings, Fire Escapes and Ladders, Jails, &c. Our Fencing can be shipped to any part of the United States, and can be set up by the purchaser at small expense. Our prices are reasonable. Correspondence and notice of public lettings of ironwork solicited. Every Hardware Dealer should have our Catalogue. Address: CLEVELAND WROUGHT IRON FENCE WORKS, Office, 21 Water street, near Union Depot, CLEVELAND, OHIO.

## PENFIELD BLOCK CO., Penfield Block Works, Lockport, N. Y., U. S. A.

Manufacturers of a Full Line of

Store, Warehouse, Platform, Railroad and Express TRUCKS. PULLEY BLOCKS, SHEAVES, Faucets, Mallets & Car Pushers.



HENRY B. NEWHALL, 105 Chambers Street, NEW YORK AGENT. S. H. & E. Y. MOORE, 163 & 165 Lake Street, CHICAGO AGENTS.

broad cutter is used, which removes a thin chip nearly equal in width to the semi-diameter of the trunnion. A small spur is left by this tool at the center of the trunnion which is afterward chipped off by hand. When one trunnion is finished, the gun is turned over and the other is finished in the same manner.

The metal in excess between the trunnions is removed by the planing machine, which is placed on the side of the lathe opposite the trunnion head. This machine is so arranged that the bar in which the cutter is secured moves forward and back in a horizontal plane, carrying the cutter over that portion of the gun between the trunnions which has not been turned down. The cutter works upon a pivot in the bar, by means of which it cuts only while moving to the rear, the gun being turned the width of the cut after each passage of the planing bar. The proper direction is given to the cutter by means of a guide attached to the planing bar, which moves in a groove of the required curvature. After the planing is finished, the gun is removed from the lathe and placed upon skids, and the cascabel is broken off. The breech, rim-bases and sight-mass are then finished by chipping off the surplus metal by hand. The vent is drilled by means of a hand-drill arranged to work in an iron frame firmly secured to the gun.

### INDUSTRIAL ITEMS.

#### NEW HAMPSHIRE.

The Exeter Machine Company, of Exeter, are manufacturers of the original and only Exeter Sectional Non-Explosive Boiler. Some idea of the present proportions of their business is gained when it is stated that they have orders eight months ahead. Twenty engines and 20 boilers are among the orders yet unfilled. They are to furnish boilers and heating apparatus for the Vermont State Prison, the Catholic school at Haverhill, Mass., and the Insane Asylum at Halifax, N. S. To accommodate their increasing business they are erecting new buildings, and will increase their force of employees 20 per cent.—*Boston Commercial Bulletin.*

#### MASSACHUSETTS.

Lamson & Goodnow Manufacturing Co., Shelburne Falls, have been well supplied with orders during the year, and in some instances have been compelled to work overtime. They now employ 300 men. At a meeting held on the 14th inst. Joseph Gildersleeve and H. O. Smith were chosen directors.

The Defiance Twist Drill Company, of Taunton, will shortly begin to produce twist drills which are said to be an improvement on those heretofore made by the old process of milling the grooves, &c. The company will use the best quality of cast steel, made expressly for these drills. The process of tempering insures an article that is said to do a greater amount of work than that accomplished by many of the twist drills now in use.

The Merrimac Machine Shop, of Lawrence, Albert Blood proprietor, is having a good business. One of his specialties is a cochineal and indigo mill for grinding cochineal and all other dry dyes, and these wherever used have given good satisfaction. In his fans for wool drying he has made an improvement and believes that they will do the work claimed for them thoroughly. At present he is at work on two balance wheels, one of which is 12 feet in diameter, 31-inch face and weighs about 11,500 pounds, and the other about the same size, for an engine which will be shipped to New Orleans.—*Boston Commercial Bulletin.*

The fires of the small furnace at the glass works at Sandwich were put out on the 11th inst. Work still continues brisk, the larger furnace being run to its full capacity.

A hydraulic press of great power has recently been placed in the works of the Fairpoint Manufacturing Company at New Bedford.

The Porter Britannia Works establishment at Taunton is offered for sale by its owner F. L. Ames, of Easton.

The Gardner Manufacturing Company, of Shelburne Falls, have taken their old shops and are running with their full complement of hands under full time at their new factory. They are manufacturing pocket cutlery only, but are soon to increase their force and commence to make the finer grades of table cutlery under J. W. Gardner's special patent.

The S. A. Woods Machine Company find it impossible to keep up with orders at their works in South Boston, notwithstanding they are running extra time and employing more men than ever before. They are, however, increasing their facilities, and will endeavor to supply the growing demand for their machinery. They still make a specialty of planing and molding machinery, as they have for the past 25 years.

#### CONNECTICUT.

The Smyth Book Sewing Machine Company, of Hartford, have begun building for their business at the corner of Cushman and Sigourney streets.

There has been some talk of organizing a joint stock company in Hartford for the manufacture of an English engine. A Hartford capitalist holds the exclusive right for its manufacture in this country, and has sent agents to England to look into the subject.

#### NEW YORK.

Two thousand eight hundred and fourteen acres of land, known as the Mount Hope Iron Company's property, in the Western part of the town of Fort Ann, have been sold to the Mount Ferrol Iron Company of New York for \$150,000.

A new engine and boiler are being placed in the Troy Co-operative Foundry.

#### PENNSYLVANIA.

The Douglas Machine Works, at New Castle, formerly Valley Foundry, are working about to men a day, full force, on their kind of work, with plenty of orders ahead and everything in good shape.

At the Stewart Iron Works the bloom mill is on fifteen furnaces, six heats a day. Blast furnace No. 1 is beginning to show a desire to be blown out; seems to wish for a rest. There is some talk of adding 10 feet to the height of this stack when it is blown out. Stack No. 2, up to average in every-

thing. The addition to the office, spoken of some time ago, is finished and looks well.

The Southwest Branch of the Pennsylvania has shipped 832,509 tons of coke since January 1st; besides this it has shipped 3387 tons raw coal.

The Bellefonte Car Works are now running day and night.

The Hopewell Furnace, Bedford County, will go into blast about August 1.

The largest pieces of round steel ever turned out in the Lehigh Valley were worked at the old mill of the Bethlehem Iron Company. Of these, two were 50 feet in length, and measured 4 inches in diameter.

A monster blowing cylinder has been successfully molded and turned at the Gaysport Foundry. The inside diameter is 72 inches, length 7 feet 9 inches and weight 7 tons and 1300 pounds. It is intended for a blast furnace, and is the heaviest casting of the kind ever made in that part of the State.

Dispatches from Lancaster are as follows:

In addition to the iron furnaces in the vicinity of Columbia and Marietta, this county, now nearly all in operation, and many foundries, bolt works, lock works, boiler works, rolling mill and furnace of Lancaster—the latter owned by Messrs. Peacock & Thomas—some new iron industries are being developed by Mr. A. H. Peacock, of the latter-named firm. He has just reopened an ore bank near Safe Harbor, the place having been abandoned some time ago, and by the aid of new and improved machinery he expects to develop the mine and secure a very good yield. Mr. Peacock has also opened a new ore bank at Quarryville, having already ordered the machinery necessary to prosecute active operations. One of the greatest developments of iron ever known in the country is that which is being pushed by a Philadelphia company in Conestoga township, along the line of the Pequea Creek.

The corporation is known as the Pinegrove and Pequea Mining Company, and the ore which they intend to mine is magnetic and very valuable. The company own about 12 acres of ground; the mine is perhaps 100 feet deep and is reached through a bed of solid rock. Twenty carpenters began work this morning to erect a building 150 by 75 feet. A 140 horse-power engine has been ordered, to force the water from the Pequea into a reservoir now in course of construction on a hill near by. The reservoir will be 60 feet deep, 40 feet in width and 8 feet in depth. Patent magnetic rollers have been ordered for the purpose of separating the magnetic from the common ore, and it is expected that the development of the mine will require the services of a very large number of men.

For the week ending 18th inst., at the Westernman Iron Works, the puddle, sheet and guide mills were running double turn; hoop mill, singletree, nail factory on five days, after a long stop. Some little trouble was occasioned at the bar mill by the men not thoroughly understanding the new scale in the matter of "crop ends," but everything was settled satisfactorily on Saturday night, and the trouble is all over. Chain factory working full force. Both blast furnaces went in Monday forenoon, and by Tuesday night were up to the standard.

The Spawna & Dennison Manufacturing Co., of Reading, have received a contract for a second-class steam fire engine for a Paterson, N. J., company. The engine will be without any ornament whatever, and will be built entirely for service. The company has been asked for proposals from a number of cities and towns in the Middle and Southern States for building steam fire engines.

Report has it that the Pottstown Iron Co. are about to enlarge their nail works at that place, and that they contemplate putting up 25 additional nail machines. This indicates that there is an increasing demand for the nail manufactured by this enterprising company, and also that they are determined to keep pace with the improvements and demands of these prosperous times.

It is said that Matilda Furnace will blow out as soon as the present supplies of stock are exhausted. This will be unwelcome news to many who are employed there.

Six men now operate the Indiantown silver mines, and Mr. B. Williams has taken specimens to Cleveland to exhibit to stock holders.

Satter Bros., boiler makers, have received orders for two 25-horse and two 12-horse-power boilers for New York, and one 5-horse-power boiler for a Reading party.

The ore from the nickel mines near Christiansburg, Lancaster County, is smelted and run into bars, which are then shipped to Camden, N. J., where it is refined and the silver and copper is extracted.

Prominent citizens of Wilkesbarre have agreed to subscribe \$300,000 to the stock of a new Bessemer steel mill, if erected in that city.

Work has been begun in the pattern room of the Reading Iron Works, on the first Lyman-Haskell accelerating or multicharge cannon. The gun will be 25 feet long and have a bore 6 inches in diameter. Along the bore four pockets will be located, in each of which a charge of powder will be placed, with the view of accelerating the speed of the ball after it leaves the chamber of the gun and during its progress through the bore. The charge of powder will be 150 pounds, and the weight of shot 150 pounds. It is calculated that a shot from the gun will penetrate through 2 feet of solid wrought iron. The expected range of the gun is 10 or 12 miles.

The Monocacy Furnace, which went into operation last week, is working admirably, and the 40 employees are all glad to see their old work-place in bloom. Considerable improvement has been made at the furnace. An iron draft stack, 75 feet high, takes the place of the old brick stack, which has been removed. The proprietors intend making foundry iron, for which there is a steady demand.

The Harrison Boiler Works, Philadelphia, have recently made two boilers for J. H. Elverson, publisher of *Saturday Night*, and two for the Brown & Sharpe Manufacturing Company, of Providence, R. I. They have orders ahead for new boilers enough to keep them busy for several months, and have orders to increase the power of boilers that have been in use ten or twelve years.

PITTSBURGH AND VICINITY. Livingston & Co., Allegheny, hardware



# H. D. SMITH & CO.,

Plantville, Conn.,

Manufacturers of the

## BEST QUALITY CARRIAGE MAKERS' HARDWARE.

Manufacture the Largest Variety of Forged Carriage Irons of Best Material and Workmanship.

PRICES LOW FOR QUALITY OF WORK FURNISHED.

SEND FOR PRICE LIST.

## SARANAC HORSE NAIL CO.

Polished or Blued Horse Nails, Hammered and Finished.

The Saranac Nails are hammered hot and the finishing and pointing are done cold. Quality is fully guaranteed. For sale by all leading iron and hardware houses.

S. P. BOWEN, President and Treasurer.

PLATTSBURG, N. Y.

W. S. GUIBORD, Secretary.

ELY & WILLIAMS, Gen'l Agents for Eastern and Middle States, 1232 Market St., Philadelphia; 178½ Water St., New York; 36 Oliver Street, Boston. S. H. & E. Y MOORE, Gen'l Agents for Western States, 163 and 165 Lake Street, Chicago, Ill.

SAM'L G. B. COOK & CO., Agents for Southern States Nos. 67 and 69 (old Nos. 5 and 7) German Street, Baltimore, Md.

SARANAC HORSE NAILS,

Blued or Polished.

Terms, Cash, within 60 Days.

Nos. 5 6 7 8 9 10

Cts. 26 23 21 20 19 18

HARTLEY & GRAHAM, 17 & 19 Maiden Lane, NEW YORK,

Agents for the "ROBIN HOOD" REVOLVERS.

STEEL BARREL AND CYLINDER.

22, 32, 38 and 41 CALIBRE.

Cal., Short or Long Cylinder.

Wood, Rubber, Ivory and Pearl Handles.

Plain or Fluted Cylinders.

Round or Octagon Barrels.

Plain Finish, Engraved or Enameled.

FOR JOBBING TRADE.



ROBIN HOOD No. 1, 22 Cal.

32 Cal. Long Fluted Cylinder.

Wood, Rubber, Ivory or Pearl Handles.

Round or Octagon Barrels.

Plain or Saw Handle.

Plain Finish, Engraved or Enameled.

FOR JOBBING TRADE.

## MARLIN REPEATING RIFLE.



LATEST AND BEST.

MANUFACTURED BY

MARLIN FIRE ARMS COMPANY, New Haven, Conn.,

Makers of the Celebrated BALLARD RIFLES.

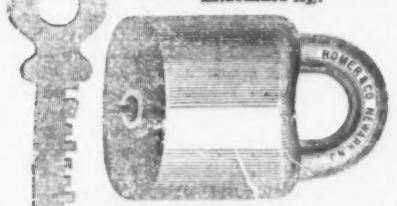
Mr. C. GORE, Denver, Col., writes: "It is the best Magazine Rifle I have ever seen."

Made in two sizes, 40 cal., 60 grains powder 280 grains lead; 45 cal., using government cartridge. Send for descriptive list.

SCHOVERLING, DALY & CALES, Sole Agents, 84 & 86 Chambers St., N. Y.

Agents for the sale of Standard Revolvers; and also for Harrington & Richardson, Manufacturers of the H. & R. Line of Revolvers, Victor and Etna Brands. The best quality cheap pistols in the market. Agents and Importers of Guns, Pistols and Gun Material.

Romer & Co. Established 1837.



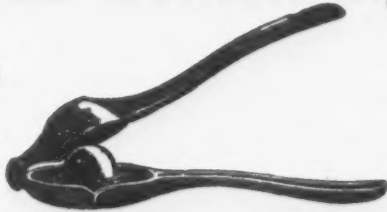
Manufacturers of Patent Scandinavian or Jail Locks, Brass Pad Locks for Railroads and Switches. Also Patent Stationary & R. Car Door Locks. HANDCUFFS AND LANTERNS. 141 to 145 Railroad Avenue, NEWARK, N. J. Illustrated Catalogue sent to the trade on application.

**AXLES**  
All kinds Wagon & Carriage Axles  
Manufactured by the  
LANBERTVILLE IRON WORKS.  
LANBERTVILLE, N. J. Send for prices.

## The Boss Lemon Squeezer.

Malleable Iron and

Tinned (pure Tin).



Acknowledged the Best.

Patent Applied For.

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ORDER EARLY.

CHAMPION

HOG RINGER

RINGS and HOLDER.

Only double ring ever

invented. The only

ring that will effectually

keep hogs from

rooting. No sharp

points in the nose.



EAGLE BILL

CORN HUSKER

Is the best Husker in the

market. Farmers say it

is the best. Use no other.

Rings 75c. Rings, 50c, 10c. Holders, 75c. Huskers, 15c.



BROWN'S

HOG AND PIG

RINGER and RINGS.

Only single ring in

the market that closes

on the outside of the

nose. No sharp points

in the nose to keep it

soft.

CHAMBERS, BERING & QUINLAN, Exclusive Manufacturers, Decatur, Ill.



Bemis & Call Hardware & Tool Co.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.

For Circulare and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

## BROWER & LEEDS,

81 Murray Street, New York.

SOLE AGENTS FOR

## BROOKS' "BOSS" SCYTHE RIFLES

And Boss Sharpeners.

These Rifles are made of

PURE TURKISH EMERY,

are warranted not to scale or glaze, are impervious to water and not affected by solar heat.



## THE BUTLER DOOR AND GATE SPRING.

Adjustable, Reversible, Self-locking. Has no Loose

Piece. Needs no Wrench. Acknowledged the

Simplest and Best Made.

BUTLER DOOR SPRING CO., Cleveland, Ohio.

BROWER & LEEDS, 81 Murray St., New York Agents.

HORACE F. SISE, 100 Chambers St.,



THE "BOSS" SCYTHE RIFLE.

Warranted not to scale or glaze. Impervious to water, and not affected by heat. It is the best Rifle now offered.

LEVI L. BROOKS, Manufacturer.

IRVINE, TOWNSEND & CO., Sole Agents, 123 Chambers Street, New York.





**SPENCER & UNDERHILL,**  
94 Chambers St., New York, Agents for  
American Screw Co.'s Wood Machine and  
Rail Screws, Stove and Tire Bolts, Rivets, &c.  
G. F. Warner & Co.'s Carriage Clamps.  
**DEPOT FOR**  
O. Ames & Son's Shovels, Spades and Scoops.  
A. Field & Son's Tacks, Brads, Nails, &c.  
Nicholson File Co.'s Files and Rasps.  
W. & S. Butcher's Chisels, Gouges, Plane  
Irons and Cleavers.  
E. W. Gilmore & Co.'s Strap and T Hinges.  
Russell Jennings' Auger and Dowel Bits.  
Also a general assortment of Hardware.



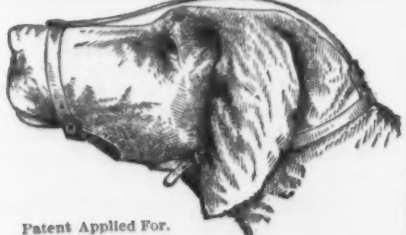
**STRONG'S UNIVERSAL SASH-LOCK**  
Is attached to the Sash easily, without in the least weakening or defacing it. No holes to be cut in casings, no attachments thereto, no abrasion no matter how long used, nor how severely. Is never out of order. Address

**Universal Sash-Lock Co.,**  
8. W. corner Hamilton and Liberty Streets,  
ALBANY, N. Y.

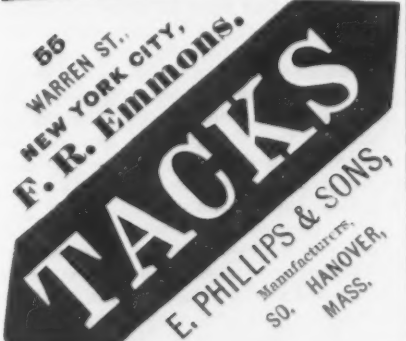


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Manufacturers of  
Calkers', Carpenters', Stone Cutters',  
Tin, Copper and Boiler Makers'  
**MALLETS,**  
Hawking Beets, Hawking and Calking Irons;  
also all kinds of Handles, Sledge, Chisel and Hammer  
Handle. Also  
**COTTON AND RALE HOOKS.**  
Patented Feb. 13, 1877; a new combination of Hooks.  
450 E. Houston St., New York City.

**The Perfect Fit Dog Muzzle.**



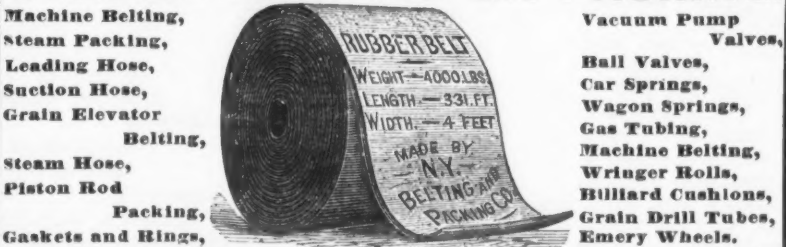
Patent Applied For.  
**THE MEDFORD FANCY GOODS CO.,**  
**DOG COLLARS & FURNISHINGS,**  
95 Duane Street, New York.  
Send for Illustrated Catalogue.



**W. & J. TIEBOUT,**  
Manufacturers of  
Brass, Galvanized & Ship  
Chandlery Hardware,  
No. 33 Chambers St., New York.

## Vulcanized Rubber Fabrics

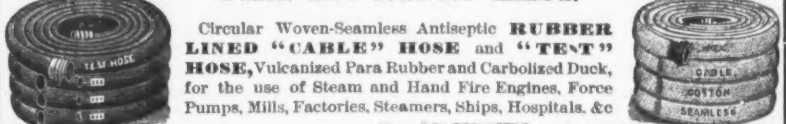
ADAPTED TO  
MECHANICAL PURPOSES.  
**RUBBER BELTING and PACKING.**



Machine Belting,  
Steam Packing,  
Leading Hose,  
Suction Hose,  
Grain Elevator  
Belting,  
Steam Hose,  
Piston Rod  
Packing,  
Gaskets and Rings,  
Vacuum Pump  
Valves,  
Ball Valves,  
Car Springs,  
Wagon Springs,  
Gas Tubing,  
Machine Belting,  
Wringer Rolls,  
Billiard Cushions,  
Grain Drill Tubes,  
Emery Wheels.

This company manufactures the immense DRIVING and ELEVATOR BELTS for the Buckingham  
Elevators at Chicago, which have been running perfectly for more than Twelve Years, also those for  
Armour, Dole & Co., Chicago, and Vanderbilt's great elevators of the New York Central and Hudson R.  
R. Co., New York, being the Largest Belts in the World! We are now making an Elevator Belt 36  
inches wide and 250 feet in length, which will weigh over 4,000 pounds.

## LINEN and COTTON HOSE.



Pat. 6515. Circular Woven-Seamless Antiseptic RUBBER  
LINED "CABLE" HOSE and "TEST"  
HOSE, Vulcanized Para Rubber and Carbolized Duck,  
for the use of Steam and Hand Fire Engines, Force  
Pumps, Mills, Factories, Steamers, Ships, Hospitals, &c.  
Pat. July, 1875. "CABLE" ANTISEPTIC

## Emery Wheels and Packing.



Patented. ORIGINAL  
**Solid Vulcanite  
EMERY WHEELS**  
LARGE WHEELS MADE ON CAST-IRON CENTER IF DESIRED  
Section of Emery  
Wheel showing  
Iron Center.

The properties of these Wheels are such that they can be used with great advantage and economy  
for cutting, grinding, and finishing Wrought and Cast Iron, Chilled Iron, Hardened Steel, Slate, Marble,  
Glass, etc. These wheels are extensively used by manufacturers of Hardware, Cutlery, Edge Tools,  
Pumps, Safes, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agricultural Implements, and small  
Machinery of almost every description.  
Pat. Jan. 26, 1865. PATENT ELASTIC  
**Rubber Back Square Packing**  
BEST IN THE WORLD.  
For Packing the Piston Rods & Valve Stems of Steam Engines & Pumps  
B represents that part of the packing which, when in use, is in contact with the Piston rod.  
A the elastic back, which keeps the part B against the rod with sufficient pressure to be steam tight,  
and yet creates but little friction.  
This Packing is made in lengths of about 20 feet, and of all sizes from 1/4 to 2 inches square.

**Corrugated Rubber Mats and Matting,**  
Pat. 11,308, 213,601. For Halls, Flooring, Stone and  
Iron Stairways, &c. Pat. July, 1875.



**NEW YORK BELTING & PACKING CO.,**  
Warehouse, 37 and 38 Park Row, New York.  
**JOHN H. CHEEVER, Treasurer.**

## TACKS & NAILS.

**CUT TACKS, SHOE NAILS, WIRE NAILS,**  
Pat. Brads, Finishing Nails, Clout Nails, Trunk Nails, Hungarian Nails,  
Cigar-Box Nails, Basket Nails, 2d and 3d Fine Nails,  
Carpet Tacks, Upholsterers' Tacks, Gimp and Lace Tacks, Brush  
Tacks, Copper and Brass Tacks,  
**BRASS AND IRON ESCUTCHEON PINS, &c., &c.**  
MANUFACTURED BY  
**DUNBAR, HOBART & WHIDDEN, So. Abington Station, Mass.**  
New York Salesroom, 39 Warren St. Goods made to order from sample.  
Particular attention given to orders for EXPORT.

## PHOSPHOR-BRONZE.

## The Phosphor-Bronze Smelting Co.,



Owners of the  
U. S. TRADE MARKS: Sole  
Phosphor Manufacturers  
of  
Phosphor  
Bronze  
Patents. "Phosphor-Bronze." in the  
United States.

Office and Salesroom,  
512 Arch Street, - - - PHILADELPHIA, PA.

**THE STRONGEST, TOUGHEST,  
BEST AND MOST DURABLE METAL.**

**PHOSPHOR BRONZE SPRING WIRE AND WIRE FOR WEAVING, &c.**

Pump Rods, Tubes, Screws, Jack Chains,  
Rolled Bolts, Nails, Wire Cloth, Sash Cords,  
Sheets, Boat Nails, Pens, Wire Ropes,  
Plates, Tacks, Sash Chains, Cast Kettles.

**INGOTS FOR CASTING.**

Send for Pamphlet and Price Lists.

## PHOSPHOR-BRONZE.

manufacturers, have put in new machinery  
in the addition to their works, which will  
more than double their former capacity.  
They are running largely on orders, and are  
sold up close on their staple products. Business  
good in all departments. They have a  
large trade in corn mills and shellers.

Maxwell, Silliman & Dunn, Allegheny,  
iron foundry, have just finished eight  
boiler fronts, 46 inches in diameter, for  
Spang, Chalfant & Co.

The McKnight mill on the Southside,  
operated by Oliver Brothers & Phillips has  
suspended operations on account of the  
giving way of the foundation of the fly  
wheel of the main engine.

Everson, Macrum & Co., are running  
triple turn and are full of orders.

It was announced last week that Mr. J. J.  
Vandegrift, the well-known oil operator and  
capitalist, had gone into partnership with  
Joshua Rhodes in the Crescent Tube Works.

The company proposes to engage in the  
manufacture of pipe and tubing on an exten-  
sive scale. Prices are high just now for  
pipe and the business is a profitable one.

Lindsay & Co.'s new glass house at Leas-  
dale, Chartiersborough, will start up within  
the next two weeks.

## DELAWARE.

Work in nearly all the industrial estab-  
lishments in Wilmington is very brisk, and  
in some of them, particularly in ship yards  
and car shops, the orders are beyond the  
capacity of the shops to fill them as fast as  
the work is needed. At the Harlan & Hollings-  
worth Co. work is more pushing than for a  
number of years, and the shops are full of  
men working on full time. The new  
steamer, City of Wooster, for use on Long  
Island Sound, is nearly completed, and in a  
few weeks will be placed on the line from  
New York. This steamer, it is said, will be  
the most complete in all its arrangements of  
any steamer on that line. The firm are now  
building five ferry boats, two of which are  
for the Camden and Philadelphia Steamboat  
Company, one for the West Jersey Ferry  
Company, one for the Nassau Ferry Com-  
pany of New York, and the other for the  
Pennsylvania Railroad Company, to run  
between Jersey City and New York. The  
passenger and freight propeller Gaston, for  
the Baltimore Steam Packet Company, is  
nearly finished. The firm have commenced  
overhauling and repairing the four large  
steamers belonging to the Morgan, Louisiana  
and Texas Railroad and Steamship Com-  
pany. In the car shops every available  
space is occupied, and even temporary sheds  
are erected outside to allow room for work-  
men engaged in the making of cars. Among  
them are 65 which are to be shipped in a  
few days to Brazil. The car shops of Jack-  
son, Sharp & Co., and Bower, Dure & Co.,  
are also full of orders for cars for abroad  
and in all portions of the United States.

## OHIO.

Lawrence Furnace, Scioto County, is doing  
well. She started up on the 8th, after being  
banked up for four months, a thing not often  
done, and is now making from 12 to 14 tons  
of good warm-blast iron per day.

The land purchased by the Cleveland  
Forge and Iron Company on the lake shore,  
and which is 1000 x 200 feet, will, together  
with the new building to which their works  
are to be transferred, have cost \$100,000.  
The company employs some 500 men. They  
operate ten hammers now, and will add six,  
of which three are under contract. They  
will also put in machinery for finishing heavy  
work.

Tuscarawas Coal and Iron Company, man-  
ufacturers of pig iron, Canal Dover, employ  
40 hands. Mr. J. F. Card, Cleveland, is  
president; Mr. J. F. Rhodes, Cleveland,  
treasurer, and Mr. S. W. Croxton, of Canal  
Dover, general manager.

The Urbana Brush Electric Light and  
Power Company, with a capital of \$30,000,  
has been incorporated at Columbus. The  
enterprise takes in the villages of Mechanics-  
burg, North Lewisburg and St. Paris in ad-  
dition to Urbana.

The Cuyahoga Works, Cleveland, have  
just shipped one of their larger class steam  
helve hammers to the New Albany Forge, at  
New Albany, Ind. The steam cylinder is  
32-inch bore, and the hammer and anvil  
block weigh 68,000 pounds.

The American Knob Works, East Liver-  
pool, R. Thomas & Sons, supply mineral  
door and furniture knobs of excellent qual-  
ity, and have an improving trade. They  
employ fifteen hands.

The Webster, Camp & Lane Machine Co.,  
Akron, manufacturers of engines, boilers  
and mining and milling machinery, have,  
says our correspondent, a new brick foundry  
nearly completed, the dimensions of which  
are 116 x 72 feet. The company's trade is  
thriving; they employ 80 hands.

Mr. T. J. Parkhurst lately opened an  
establishment at 35 South Water street,  
Cleveland, where he carries on business as a  
practical machinist and steam fitter. His  
engineering skill and extensive experience  
are in his favor. All work is guaranteed to  
give satisfaction.

## KENTUCKY.

Pennsylvania Furnace is starting her this  
season's blast quite satisfactorily, expecting  
to run until the latter part of the present  
year. Her stock is now coming in at the  
rate of 12 loads of charcoal and 25 tons of  
iron ore per day.

Every department of the Norton Iron  
Works is in splendid working condition.  
During the past week the furnace put out  
350 75 100 tons of iron. During the same  
time the nail factory turned out 3918 kegs.  
Hunnell Furnace is receiving 24 loads  
of charcoal daily, and is averaging about 18  
tons of iron per day.

Ashland Furnace is doing good work, put-  
ting out an average of 55 tons of iron per  
day.

Kenton Furnace is once more in blast,  
making 10 tons of charcoal per day.

## INDIANA.

The brass foundry and machine works  
at Fort Wayne employ 600 men. About 60  
tons of metal are melted per day for ordinary  
castings, mostly for railroad use, and about  
90 tons per day for car wheels. A new two-  
story machine shop, 70 x 230, is being  
erected. The old one will be converted into  
a hammer shop for the manufacture of car  
axles and general railroad castings.

The New Albany Forge Works have re-

ceived a 36,000-pound pair of shears, capa-  
ble of cutting a 4-inch square cold bar of  
iron

## ILLINOIS.

The new addition to the Smith & O'Leary  
steam-hammer forge is about completed, and  
a third more men will be employed in  
them.

The Phoenix Chain Works, Chicago, which  
have been shut down since the first of the  
month, are now located at their new works,  
14 Lydia street. Twenty-five hands are to  
be employed.

Williams, White & Co., of Moline, manu-  
facturers of the Justice dead-stroke hammer,  
bending machines, drop presses, gaug borers,  
&c., are doing a large business, and keep  
from 60 to 100 men constantly employed.  
They are having many orders for bending  
machines to bend the arch bars for freight-  
car trucks. To their extensive works they  
will soon build a large addition and add new  
machinery. They recently sent a number  
of skein-setters to Texas.

A new manufacturing concern seeking  
location near Chicago is the Abell Harvester  
Company. They are likely to find a place  
near Washington Heights, in the vicinity of  
the crossing of the Panhandle and the Chi-  
cago and Rock Island railroads.

The Moline Scale Company will shortly  
increase their facilities, in order to keep up  
with their rapidly increasing trade. They  
make a full line of heavy scales.

The Vulcan Iron Works Company, Chi-  
cago, furnished the engine for the new steam  
propeller Boscobel, recently launched. The  
cylinder was 32 inches in diameter and 32  
inches stroke.

A complete outfit of stoves for heating,  
cooking and laundry is being furnished by  
the Goodwin Gas Stove and Meter Com-  
pany for the hotel at Pullman.

The Joliet Steel Works continue to in-  
crease in capacity, and now employ 2000  
men. The pay-roll for the month ending  
June 15 aggregated \$96,000.

## MISSOURI.

Two first-class Corliss engines—one of  
1250 horse-power and one of 1000 horse-  
power—are being built at the works of the  
Smith, Beggs & Ranken Machine Company  
for the Laclede Rolling Mills, to take the  
place of the old motive-power engines  
which are being removed. The new  
factory of the Great Western Glass Com-  
pany, at the intersection of Jackson and  
Barton streets, is being rapidly pushed to  
completion, and will cost \$2500. The new  
iron-clad building of the Duggan-Parker  
Hardware Manufacturing Company, on  
Twelfth street, near the Union Depot, has  
been finished, and the machinery, apparatus,  
&c., is being placed and arranged in it this  
week. A 50 x 120 foot addition is being  
made to the works of the St. Louis Wire  
Mill Company on Papin street, between  
Mercer street and Tavenor avenue, at a cost  
of \$3000. The St. Louis Stamping Company  
are building an additional warehouse on  
Collins street, between Cass avenue and  
Florida street, which will cost \$1200.—St.  
Louis Age of Steel.

## IOWA.

The Union Scale Company, of Des Moines,  
an incorporated company with a capital of  
\$20,000, are manufacturing all kinds of  
platform, stock and railroad track scales.  
They report business good, being far behind  
their orders. Their works are extensive, yet  
they are now adding new machinery and  
constructing an additional building for a  
foundry.

The Baker Manufacturing Company, of  
Des Moines, manufacturers of barbed wire,  
are turning out about 25,000 pounds of  
manufactured wire per day. They employ  
a large force of hands which they square  
overtime. The demand for their square  
wire, four-cornered barb, which they make  
a specialty, is very large and constantly  
growing. They will shortly increase their  
capacity by putting in more machinery.

The Eagle Iron Works, of Des Moines,  
manufacturers of steam engines, mill and  
elevator machinery, are constantly crowded  
with work. They employ a large force of  
men, and expect soon to make important  
additions to the capacity of their buildings.  
The company are far behind their orders,  
and have taken no new work since January  
last.

The National File Works, of Des Moines,  
report themselves overworked with orders.  
The works which they now occupy are too  
small for their business, and they will soon  
erect a factory that will greatly increase  
their facilities. They make a specialty of  
manufacturing and recutting files.

The Des Moines Boiler and Iron Works  
report a brisk trade, and are running their  
works on full time.

## MICHIGAN.

The old Morgan Furnace, in Marquette  
County, was burned down last Saturday  
week. A fire in the bush reached the trans-  
road leading to the furnace, and was thus  
communicated to the building, which took  
fire and was totally destroyed. The Morgan  
Furnace was built by the Morgan Iron Com-  
pany, and went into blast in November,  
1863, and up to the time of being finally  
blown out had made a product of 57,573  
gross tons of pig iron. In its day the fur-  
nace was one of the most successful enter-  
prises of the kind in the district, but since  
being blown out it has been allowed to go to  
rack. The Champion Iron Company, who  
own the property of the old Morgan Com-  
pany, had taken everything valuable from  
the furnace, and as there was no probability  
of its ever being blown in, the loss cannot  
amount to much.

Mr. Charles W. Sjogren, for some years  
an employee of the Iron Bay Foundry, Mar-  
quette, has just completed the erection of a  
foundry of his own in the rolling mill dis-  
trict, and made the first heat last week. The  
building is a neat frame structure, size  
30 x 40 feet, with good-sized fan-house,  
containing a stack or cupola.

The citizens of Richmond, Va., are moving  
in the matter of an exposition in their city,  
an industrial association having been organ-  
ized and steps taken to secure a building for  
the exposition. Mr. John Ott has been  
elected president and Mr. W. E. Simons  
secretary.



New York, Thursday, June 30, 1881.

1851





and St. Louis membership, and Mr. Jarrett, its president, has declared in effect that he did not approve the extreme demands of the Cincinnati strikers. So far as the manufacturers of Pittsburgh are concerned, it is childish to accuse them of complicity in the matter. An examination of the statistics of the trade will show that there are single firms in Pittsburgh which puddle as much iron as is puddled in all Cincinnati. It is simply silly to revive these old threadbare slanders, and wholly improper for a newspaper which claims to have any standing to print charges which it is obviously unable to substantiate by even a pretense of evidence. That kind of newspaper talk may "go down" in the West, but elsewhere it is differently regarded.

#### The Insurance Scheme for German Employees.

The details of the plan of State insurance of workmen in Germany are at hand, and in view of some of the provisions, it is not at all strange that it was rejected by the workmen and failed in the Reichstag. The law at present in force in that Empire regarding compensation for injury was passed in 1871. This law is very similar to those in force in this country. In case of an accident to an employee or his death, as the result of the carelessness, negligence or any other fault of the "employer, or his commissioner or representative, or persons engaged to control or overlook the business or the workmen," compensation can be recovered for so much of the loss sustained as can be measured in pecuniary damages—in the case of an accident by the injured, and in case of death by his representative. The extent of the indemnification is decided by the judge. The records of the court show that of the cases brought to trial under this act only about 20 per cent. have been decided in favor of the workmen. The new law proposed by Prince Bismarck provided that not only in cases where the accident is the fault of some person other than the workman, but in all cases of accident, even though the workman himself might be in fault, the injured or the heirs of the dead should be entitled to compensation; but the amount to be paid in the shape of a pension, and not capitalized and paid as a gross sum. This insurance to be compulsory on all persons whose yearly salary or wages did not exceed 2000 marks (\$500), the employers being required to give notice from time to time of all persons employed whose salary or wages did not exceed that amount.

It has been supposed, from the accounts of this bill that have reached us, that the entire amount of the premium for insurance was to be paid by the employee, but this is an error. Three classes of workmen are named: First, those receiving yearly 750 marks (\$187.50); second, those receiving 750 marks to 1000 marks (\$250); third, those receiving above 1000 marks. The premium of the first class to be paid two-thirds by the employer and one-third from the public funds; of the second class, the same proportion by the employer and one-third by the insured; of the third class, the employer and insured each to pay one-half. The yearly pension in case of total disability not to exceed two-thirds of the sums named above as yearly income. In case of a partial disability, a pension to be paid proportionate to the disability, but in no case to exceed half the yearly earnings. In case of death the widow to receive, until her death or remarriage, a yearly pension of one-fifth of the yearly income of her husband, and every child one-tenth until his fifteenth year, provided the total amount thus paid did not exceed one-half the yearly income of the deceased. If this one-half be not completely taken by the widow and orphans, other relations dependent on the deceased to have a claim on the unexpended balance. This is the substance of the proposed law. It appears to have met the opposition not only of the employed, but the employers. The latter argued that it was a recognition in legislation of a certain element of socialism, and also that they would be compelled to pay constantly for accidents that might or might not happen with or without fault of theirs, while now they only paid for those that happened through their own fault. The workmen opposed it on the ground that it would lead to carelessness on the part of employers and their agents and to more frequently recurring accidents, and that what they wanted was not indemnity in case of accidents, but freedom from them. They also opposed it on the ground that they were required, in all but the lowest class, to pay for insurance against the carelessness of others.

This entire subject of liability for accident is a most perplexing one. There certainly is no justice or equity in the demand of the British workmen, which is virtually that they shall recover from their employers for all accidents. If it is the fault of the injured he has no just claim on his employer, however much he may have on charity and the State. On the other hand, the employer should be held strictly liable for accidents resulting from his own negligence or carelessness and those of his responsible agents, but how far he shall be responsible for the results of the acts of his workmen is a most difficult question. The old rule has been that an injured workman cannot recover from his employer for an injury that results from the carelessness of his fellow workman,

or "fellow servant" as the law phrases it. English workmen are demanding that the employer shall be liable for such injuries. There does not seem to be the least justice in such a demand.

The Industrial League has issued a little pamphlet which opens what we hope will be a vigorous and successful campaign in favor of the Eaton bill for the appointment of a commission to revise the tariff. The history of this bill is given, and it is shown that it could have been carried through the House if the long wrangle over the funding bill had not stopped the wheels of legislation and caused it to go over with some 800 other bills which had passed the Senate. There is good reason to believe that the bill is favorably regarded and that it will take but little of the right kind of effort to carry it. If passed early in the session, it will probably put a stop to the skirmishing with questions of tariff amendment which is otherwise to be expected, and which cannot fail to exert an unfavorable influence upon general business. If manufacturers will make it their duty to take individual action in this matter, and write to their representatives in Congress urging them to take an interest in the bill, there will be very little trouble experienced in carrying it through. Whether Congress will accept the work of the commission when it is finished, is another matter. Meanwhile, however, the work of tariff revision would probably be left to the commission, and constituted as it would be, the result of its deliberations would no doubt present a practicable scheme of tariff legislation, upon which all but the extremists on both sides could unite. It will be worth what it will cost to have the decision of such a commission on the many points involved in the tariff discussion, and whatever the outcome as regards legislation, the bill has everything to commend it. The fact that the commission would undoubtedly recommend reductions in the duties now imposed on some important articles of importation, is not against the scheme. On this subject the League say: "It must not be supposed that the 'industrial interests of this country favor a tariff commission in order that pretexts may be furnished for high duties. The industries, while demanding from their government that reasonable protection which every public interest also demands for them, and while anxious for the wise adjustment of duties in relation to each other, do not demand extreme rates or selfish advantages. The first consideration with them is their mere safety upon a basis of moderate profit; the second, that general and permanent prosperity of the country which is incompatible with excessive gains, and without which prosperity the home market fails.' As some industries which are credited with having reaped 'excessive gains' are foremost in the effort to secure the passage of the Eaton bill, we may take this as an utterance in good faith, and as an indication that in the industries in question the fact is recognized that it is expedient to meet half way the demand for tariff reform."

Last spring we noticed the completion and successful operation of the Mexican submarine cable connecting Tampico with Vera Cruz. It now appears that Gen. Grant, as representative of the International Ocean Telegraph Company, has obtained a new concession which authorizes the construction of a submarine cable from the United States, by way of the island of Cuba, to some point on the coast of Yucatan, or of any part of the Mexican coast excepting the towns of Tampico, Vera Cruz and Coatzacoalcas, which are covered by the contract of the Mexican Cable Company. The new company is authorized also to construct a telegraphic land line from the Mexican coast to the frontier between Mexico and Guatemala, thence to the Pacific, and from the point reached on the Pacific to any point on the coast of Central America. It may also construct a land telegraph line from any point traversed by its wires to the City of Mexico. All the preliminary arrangements have already been made for constructing the short cable link between Cuba and Yucatan, which is required to put this country and Europe in prompt and easy telegraphic communication with Mexico. The construction of the Mexican land lines will also be vigorously pushed without delay.

There is a rumor current to the effect that a demand will be made July 1 by the locomotive engineers of the country for an advance in wages. It is also reported that certain train hands will at the same time demand an advance. The information first came from a circular sent out by a detective agency to all the high railroad officials in the country. The remembrance of the rioting and disaster that followed a somewhat similar demand in 1877, gives this movement an importance it would not otherwise have. It is not probable, however, that the scenes of that memorable summer will this year be repeated.

Prof. Hind, who has placed himself on record with reference to the Canadian fisheries award, alleging that the statistics upon which claims for indemnity were based were falsified greatly to the prejudice of the American government, insists upon the correctness of his position. He was in this city a few days ago, after spending considerable time with representatives of Secretary Blaine in examining the documents, and

remarked, in conversation, that the discrepancies covered by the falsified figures "can only be expressed by millions of dollars," the difference from the actual official statements amounting to no less than \$800,000 in a single year. He complained that not only did the Dominion government decline to notice his revelations on the subject, but subsequently, when he visited England with the documents in the case, "the Foreign Office took refuge in the exclusiveness of 'English officialism.'" The Washington authorities appear to be willing to give him more respectful attention.

The synopsis of the discussion in the House of Commons, called out by the resolution offered by Mr. Monk in relation to the New French Tariff, which appears in our English letter this week, will be read with interest. One member found the courage to say that the so-called system of free trade is a complete imposture, so far as Great Britain is concerned; and another to threaten that unless some means of stopping the continued contraction of trade could be devised, "the industrial classes would demand distinctly 'protective measures of a rash and highly injurious character.'" The more Parliament talks about the probable demand of the British industrial classes for protection, the more certain is that demand to find prompt and forcible expression. In several districts avowed opposition to free-trade principles is a candidate's strongest recommendation to popular favor. The newspaper discussion of the failure of negotiations looking to a renewal of the commercial treaty with France, has set the people thinking and growling in a way which must make the apostles of free trade feel extremely uneasy.

A bill fixing the time for payment of wages has just passed the Pennsylvania Legislature. It compels employers to pay the wages of all employees (except those salaried by the year or working under special contract) not later than the fifteenth of the month following, and imposes a fine of five per cent. additional to the amount due on any employer who shall violate the provisions of the bill. Nothing shall prevent the making of such special contracts in writing as may be mutually satisfactory to employer and employee. The bill provides for appeals, but before such appeals shall be granted, bail in three times the amount of judgment claimed is conditioned for the payment of costs and interest. It is evident from the wording of the bill that it means nothing, and was intended as a cheap piece of harmless demagogism. Any one can "contract himself out of its provisions" and is allowed to do so by the law. But, on the other hand, few have any need to contract out of it, as most wages in the manufacturing industries of Pennsylvania are now paid weekly, fortnightly or monthly.

Our English correspondent sends us, on the authority of the Sheffield Telegraph, the sad intelligence that, owing to lack of funds, the Cobden Club will this year dispende with its annual dinner. If this does not excite sympathy in this country and induce someone to grab his hat and start around with the subscription paper to raise the money, we shall be surprised. The Cobden Club has been instrumental in causing large sums of money to be sent to this country to be expended in missionary work among our farmers and others who inclined to worship at the altars of the Baal of protection. It having done the best it could to convert us from the error of our ways, and now that the Cobden Club is too poor to dine, there ought to be gratitude enough among its admirers in this country to see that its necessities are supplied by charity. We commend this subject to the consideration of the officers and members of the Free Trade League.

The protest of the Alumni Association of Lafayette College against the acceptance by the Trustees of the resignation of Prof. Thos. M. Drown, is a pleasant compliment to that gentleman and one entirely merited. We sympathize with Dr. Drown in his natural desire to throw off the cares and burdens of his professorship, but such men cannot be spared from our colleges, and as the Trustees and Faculty have every reason for wishing to decline the resignation, we have no doubt they will welcome the moral support which the Alumni have given them in so deciding.

#### The Murder at Dunbar.

At Dunbar, Pa., on the evening of June 26th, Mr. Maurice Healy, foreman and foundryman of the Dunbar Furnace Company, was shot and instantly killed by two unknown men, not 100 yards from a dwelling house, and but a few hundred from the furnace, to which he was going to see the nine o'clock blast run. Mr. Healy was one of the most prominent men about here, being a one-fourth owner in the Dunbar Sand and Furnace Company, and an owner in the Fayette Coke and Furnace Company, a partner in the Perry Mining Company, and also manager and foundryman at Dunbar Furnace, the largest and best equipped plant in this country. As described by Major De Saulles, vice president and superintendent of the furnace, his superior and friend, he was an open-hearted, genial, square man, and he says he has lost his right hand. He was a large, powerful man, blue eyed and black haired. Trouble has been in the air for months, and Healy was threatened several times by anonymous letters, but paid no attention to them. The place where the tragedy occurred was on the track of the Dunbar Furnace

Company's switch, and just where the track makes a sharp curve. Mrs. Harper, who is the most important witness, and, indeed almost the only one, says she saw Mr. Healy pass her house, which stands a little back from the wagon road within 5 feet of which Healy was killed. The wagon road is between the house and railroad. Almost at the same moment that she saw Healy she noticed two other men on the wagon road, which just here makes a very abrupt ascent up a little hill, while the railroad switch curves under the bank of the hill. It was the dreariest spot on the road. A few moments after Mrs. Harper saw the men go by, as she was looking out of the window waiting for the people to return from church, she heard Healy's voice say "Good God, men, you wouldn't use me like this, would you?" Then almost instantly she heard four pistol shots. Her mother, who was in the house, also heard the shots, but did not see the men. When she heard the shots she screamed to her to come in or she would be hurt, and the daughter obeyed, very much terrified, and before she could give the alarm some one returning from church discovered the murdered man. As he lay there in his blood, which flowed from four bullet holes, one in his neck, severing the jugular vein, and another just below his heart, either one of which would have caused instant death, he presented a ghastly sight, and women screamed and men gazed with tears in their eyes at their former friend and boss. Maurice Healy was 41 years old. A special train was dispatched at once by Major De Saulles to Uniontown for the coroner, who arrived about midnight. A jury was sworn at once, who viewed the body and adjourned to meet next morning. They assembled at 7 a. m. and began the examination, and in the evening at 7 o'clock the inquest was adjourned to meet Thursday, the 30th inst. The authorities have their eyes on the men who answer descriptions which the witnesses gave. The furnace was blown out by order of Major De Saulles, and the most intense excitement prevails.

#### Silas C. Herring.

On the 23d of June Silas C. Herring died at his home in Plainfield, N. J., at the venerable age of 78. He was in many respects a remarkable man, characterized by unusual activity, earnestness and enterprise. Two generations ago he compassed fame and fortune, and his reputation will live for generations to come. He was born in Brookfield, Mass., in 1804, and after the usual experience of a country lad went, when 17 years old, to Albany and entered the employ of his uncle, a grocer. After six years' service young Herring aided his uncle much in establishing a lottery business, in which in a few years he netted as his share about \$10,000. Success attended every effort, and at the death of his uncle he continued the business until 1834, when, at a comparatively youthful age, he closed his business and with capital came to New York seeking an investment. He soon found an opening and started a wholesale grocery store in No. 33 Front street, the firm name being Herring & Greene. In 1835 he was burned out, and though fully insured, got nothing from the general wreck. The firm failed, started again, and in 1837 participated in the ruin of mercantile interests and went by the board for good.

Having tasted the bitter fruits of unsuccessful endeavor for three years, Mr. Herring met, in 1840, an odd genius named Enos Wilder, who possessed the secret of the non-conducting power of plaster of Paris, and utilized his information by applying it to safes, called the Salamander. The innovation upon the old order of things was the subject of much ridicule among business men, and the makers of the old iron and wood-lined safes in particular. Wilder, however, had faith in his invention, knew just what it could stand, and at last boldly challenged a public test. This took place in 1840 at Coffee House slip, at the foot of Wall street. All the leading fire-proof chests, as safes were then called, were subjected to crucial tests by fire in the presence of a great multitude of people, and all were destroyed save the Salamander, which passed through the fiery ordeal successfully, preserving the books and papers which had been deposited in it. Mr. Herring, who was a witness to this trial, negotiated with Wilder; was appointed by him agent for the sale of the Salamander, and commenced business in 1841. Three years later, such had been his success that he was enabled to purchase the sole right to manufacture the Wilder safe, paying Wilder a royalty of 1 cent per pound as a part of the agreement. Mr. Herring's first manufactory and salesrooms combined were situated at the corner of Water and Depeyster streets. Through long and expensive experiments Mr. Herring finally added improvements to the Salamander, which, he claimed, rendered it superior to anything manufactured in the United States, and he backed his confidence and claims by issuing a challenge to all the safe manufacturers of the country to test their safes with his. Franklin, Delano and Gayler, of Brooklyn, and Scott, of Philadelphia, were the other principal safe makers of that time, and they accepted the challenge. An immense brick furnace was put up at the foot of Wall street, in which the safes of the rival makers were placed, and were subjected many hours to the heat of a raging fire. The other safes succumbed to the intense heat, but the Wilder safe resisted the flames to the last, and when it was opened its contents were found intact. The triumph of the Salamander spread far and wide, and in consequence the demand for it was largely increased. Among the interested spectators of the great safe trial was Horace Greeley.

"What I regarded as my first and most substantial test of the Salamander," said Mr. Herring recently in commenting on the ups and downs of his business life, "was the great fire of 1845, in which the Tribune building was destroyed. In this building was one of my safes, containing books, papers, securities, &c., of great value. At that time I lived with my family in Abingdon Square, and I vividly recall the anxiety I felt concerning the result, as this was in reality the first real fire test to which it had been subjected. My family, too, shared in

my anxiety. The night of the fire was bitterly cold, water freezing almost instantly after leaving the hydrant, and the firemen had a terrible time. The safe was covered with several thicknesses of brick after falling among the ruins, and, although surrounded underneath with an intensely hot fire, water froze on the brick forming its cover at the top. Two or three days afterward, when cooled off, the safe was taken out and opened, and everything in it was found to be preserved. The discovery lifted a heavy load off my mind, and, as you may well imagine, it added greatly to the reputation of my house." As time wore on the business and its profits jumped into millions, and among the most substantial structures of the city is the mammoth Herring building, corner of Hudson street and Ninth avenue, where over 600 men are constantly employed, and whence a \$50,000 safe is turned out as easily as in 1849 a \$50 safe was made. It is stated that in 1850 Mr. Herring paid a heavy sum to a Philadelphia chemist who had discovered that sulphate of lime was superior to any other substance then known as a non-conductor of heat. A year later appeared the first safe in which the substance was introduced. This safe was entered at the London Exhibition of that year, and a challenge was issued to safemakers of all Europe to a fire test. This offer was declined. Then Mr. Herring placed \$1000 in the drawer and announced that any one who opened the safe could have the money. Mr. Herring went to Paris for a month and returned to find that the safe had resisted the attacks made upon it by the most skillful workmen and the most perfect tools. The Wilder patent expired in 1852. In four years Mr. Herring had paid \$154,000 royalty.

#### METALLURGICAL NOTES.

##### SILVER IN BISMUTH.

R. Schneider has examined two samples of bismuth and has found silver in both. The following are his analyses of bismuth from Bolivia (Nos. 1 and 2) and Saxony (Nos. 3 and 4):

	1.	2.	3.	4.
Bismuth .....	99.93	99.99	99.99	99.83
Silver .....	0.03	0.01	0.198	0.075
Copper .....	0.258	0.136	0.090	0.040
Iron .....	.....	.....	.....	0.036
Antimony .....	0.559	.....	.....	.....
Arsenic .....	.....	0.005	.....	.....
Tellurium .....	0.140	.....	.....	.....
Lead .....	.....	.....	.....	trace
Gold .....	.....	.....	.....	.....

Little excrescences observed on a cake of No. 4 were examined, and were found to contain, by analysis, 98.873 per cent. of bismuth, 0.437 per cent. of silver and 0.665 per cent. of lead. Herr Cl. Winkler has shown recently, in an experimental way, that silver in bismuth can be concentrated easily by a process similar to the Pattinson process formerly used for lead.

##### THE MANUFACTURE OF FERROMANGANESE IN RUSSIA.

Prof. N. A. Jossa, of St. Petersburg, gives some details in the manufacture of ferromanganese at Nischuje-Tagilsk. The ores used are a manganese ore from Lebzajet and a magnetite from Visokaja-Gora, having the following composition:

	Lebzajet Manganese Ore.	Visokaja-Gora Magnetite.
MnO <sub>2</sub> .....	64.5	90.0
FeO .....	30.2	90.2
SiO <sub>2</sub> .....	10.2	10.2

The charge consists of 40 parts of well-roasted iron ore, 90 parts of manganese ore, 5 parts of calcined lime, and some cinder from previous smelting. For every 126 pounds of charge 6.3 cubic feet of charcoal are used, and with blast heated to 250° to 300° C. and 5.2 inches pressure, 60 charges are put through in 24 hours, the production being from 1 to 1.5 tons of metal, having a percentage of manganese ranging from 40 to 50 per cent. When the furnace is working well the cinder is yellowish green and fluid. As soon as the hearth is much worn out the charge is changed and a pig rich in silicon is aimed at. On a charge of 126 pounds of charcoal the burden is 110 pounds of magnetite and 17.6 pounds of quartz sand, the pig made running from 3.7 to 9.5 per cent. of silicon. Recently silicon ferromanganese has been made, containing 40 to 45 per cent. of manganese, 3 to 7 per cent. of silicon, 6 to 8 per cent. of carbon, and 40 to 45 per cent. of iron. First iron rich in silicon is aimed at, and as soon as the furnace is in good working order the burden on 126 pounds of charcoal is 13.2 pounds of silicon pig, 90.4 pounds of manganese ore, 4.4 pounds of lime, 8.4 pounds of cinder and up to 19.8 pounds of quartz sand. In 24 hours 40 charges pass through the furnace, yielding 1.1 to 1.2 tons of metal. The cinder has the following composition:

	I.	II.
SiO <sub>2</sub> .....	40.75	38.85
Al <sub>2</sub> O <sub>3</sub> .....	13.44	13.13
MnO .....	31.00	33.49
FeO .....	1.21	1.22
CaO .....	11.43	11.99
MgO .....	1.10	1.80

The blast has until now been treated in iron stoves, but brick stoves are to be used in the future.

Some curious facts have been brought to light by Dr. Wallace, of Glasgow, concerning the corrosive action of the Clyde water on metals used as sheathing for ships' hulls. He has experimented by subjecting plates, 14 inches long by 3 broad, to immersion, for the information of the Clyde Navigation Trustees. The experiments show that if a sheathed vessel had been moored for twelve months at the east end of Yorkhill Wharf, the percentage of loss on its sheathing, if of copper, would have been only 1.83, and if of yellow metal, 1.02; if in Queen's Dock, the loss would have been 1.62 and 1.28 per cent.; if at the east end of Lanefield Wharf, 1.83 and 1.96 per cent.; if in Kingston Dock, 1.35 and 1.30 per cent.; and if at wharf at foot of Brown street, 2.71 and 2.41 per cent. respectively; while on the east side of sewer opposite Custom House the loss would have been considerably less than the last-named, being only 1.66 and 2.23 per cent. respectively.





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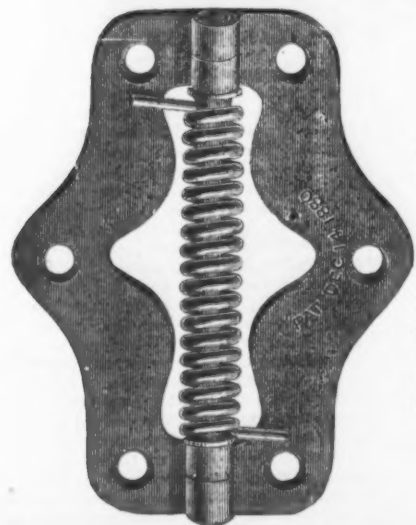




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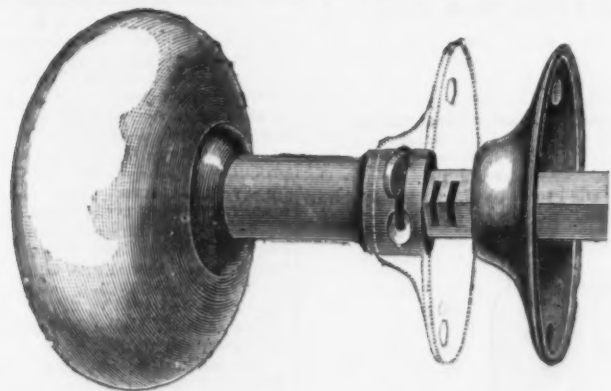
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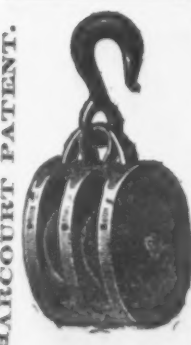
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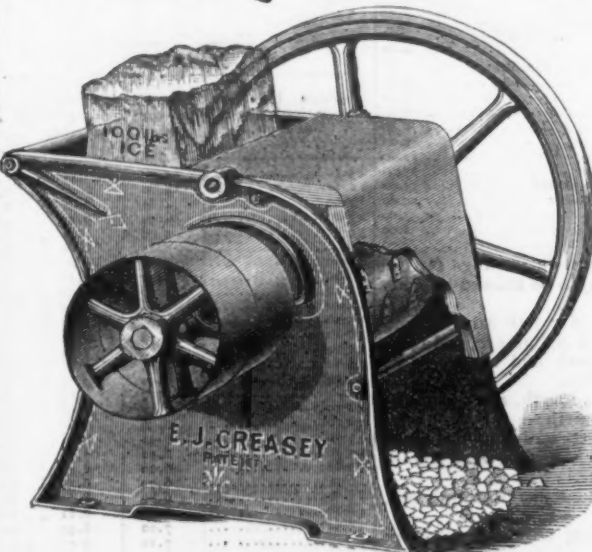
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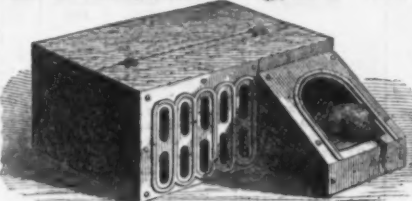
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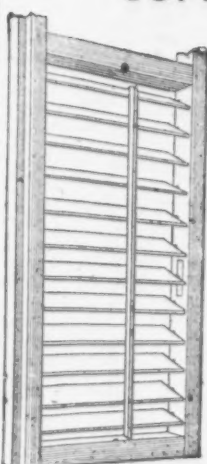
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For tightening the Slats of Window Blinds and holding them at any required angle.

The sunlight is let in or shut out at will. The blinds are made a much better protection from cold, because when the slats are shut they are so kept by the Holder and cannot be moved by the action of the wind. Noisy rattling of the slats is prevented.

The holder is securely held by its spring and the sharp points at each end.

As it is made of brass it will not rust. It cannot get out of order.

Its superiority over other holders is evident.

It requires no screws or nails to fasten it to the blind. Any one can apply it.

It cannot get loose or deface the blind as others do.

## Retail Prices.

No. 1, For Outside Blinds, 5 cents each; 50 cents per dozen.  
No. 2, For Inside Blinds, two for 5 cents; 25 cents per dozen.

At which prices samples will be mailed postpaid.

## Trade Prices.

No. 1, \$6.00 per gross; discount 50 per cent.

No. 2, \$3.00 per gross; discount 50 per cent.

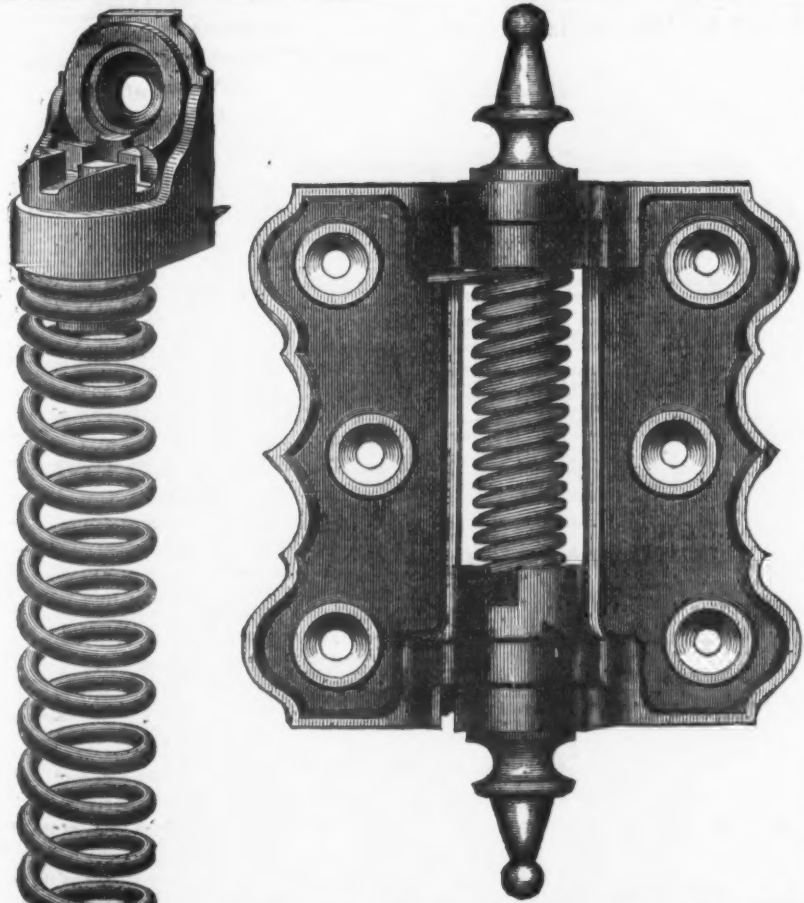
**FOR SALE BY THE TRADE.**

In case your jobbing house cannot supply you, orders will be promptly filled by

**R. W. BENTLEY, Sole Manufacturer,**

41 FOURTH ST., BROOKLYN, E. D., N. Y.





## STANDARD CLARK'S NEW Door Spring and Spring Butt.

(CUTS ARE FULL SIZE.)

The Simplest, Cheapest and Best in Use.

Require no special tool or wrench to tighten or release the tension; a nail or any thin piece of iron will do it.

Prices and Samples on application.

MADE BY

**THE CLARK HARDWARE CO.,**  
DETROIT, MICH.

**LOGAN & STROBRIDGE,**  
NEW BRIGHTON, PA.

Manufacturers of

**PATENT**

Iron, Britannia, Brass, Plated,  
and Covered Hopper

**COFFEE MILLS.**



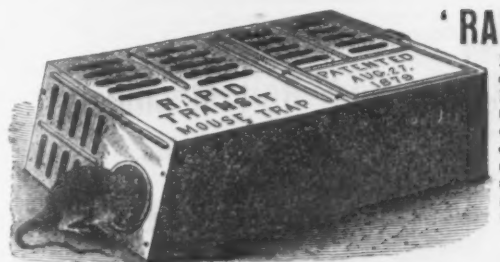
Hand and Power  
**Corn Mills.**

Housefurnishing

AND

Builders' Hardware, &c.

Send for Catalogue and Prices.



### THE 'RAPID TRANSIT' TRAP

Has no superior, and is a sure and certain catcher of Mice. With the Metal Platform resting on wood bottom of Trap, an invitation is always extended to Mice of whatever "kind, color or condition of race," into secure and grated quarters, from which they are released by opening cover of Trap and depositing contents into a pail of water.

The Mice go in at a rapid rate, And each one sets it for his mate.

Patented August 27, 1878.

Manufactured by

**THE SMITH & EGGE MANUFACTURING CO.** Bridgeport Conn.

**Stanley Rule & Level Co.,**

MANUFACTURERS OF

Improved  
Carpenters'  
Tools.



Manufacturers of **Hayley's Patent Adjustable Planes,**  
General Agents for the sale of **Leonard Bailey & Co.'s "Victor Planes,"**  
Manufacturers of **"Defiance" Patent Adjustable Planes.**

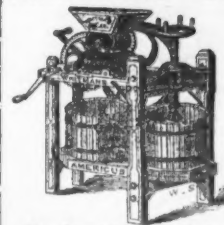
FACTORIES,

New Britain, Conn.

WAREHOUSES,

29 Chambers St.,  
New York.

### AMERICUS CIDER MILL.



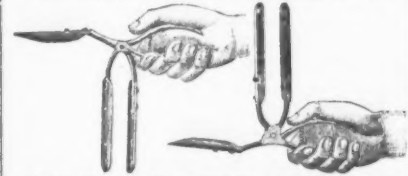
**Whitman's Patent**  
The best Cider and Wine Mill made. It will make 20 per cent. more cider than any other. Perfectly adjustable.

Three Sizes.

Geared outside. Large mills made for two cranks. Prices as low as any first-class mills.

Circulars giving full description sent free. Also Corn Shellers, Trucks, Hay Cutters, &c.  
**WHITMAN AGRICULTURAL CO.,**  
Saint Louis, Mo., U. S. A.

### FLORICULTURAL IMPLEMENTS.



Very attractive and convenient for weeding, transplanting and cultivating. Send for circular and price list.  
**J. M. JONES, Palmyra, N. Y.**

**Grindstones, Emery, &c.**

**Walter R. Wood,**  
**GRINDSTONES.**

Berea, O., Nova Scotia, & other brands

283 and 285 Front Street, New York.

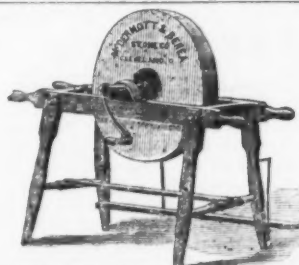
**GEO. CHASE,**

The largest manufacturers in the world of

**OIL STONE**

Of all description.

107th Street and Harlem River.  
Send for Illustrated Price List. **NEW YORK.**



**McDERMOTT & BEREA STONE CO.,**  
Manufacturers of  
**GRINDSTONES,**  
Cleveland, Ohio.

**OHIO GRINDSTONE COMPANY,**  
Manufacturers of

**GRINDSTONES**

Of All Kinds.

127 Superior Street,  
CLEVELAND, OHIO.

**LOMBARD & CO.,**

Importers and Dealers in all kinds of

**GRINDSTONES,**

Cor. Lewis Wharf & Atlantic Ave., Boston.

Stones for Machinists, Carpenters, Farmers and Glass Cutters constantly on hand and cut to order.

**OHIO GRINDSTONES.**

Superior Ohio Grindstones, manufactured by **P. L. Cole,** Constitution, Ohio, will be supplied to the Southern trade at lowest possible rates by

**S. B. LOWE, Southern Agent,**  
Chattanooga, Tenn.

**ATLANTIC STONE CO.,**

Quarrymen and Stone Merchants.  
**GRINDSTONES**

of genuine Nova Scotia and other grits from our own quarries. Mounted stones and fittings, scythes and oil stones, polishing grits, &c.

474 & 478 Atlantic Ave., Boston, Mass.

We offer you until further notice,

**OUR HARD TIMES CHALLENGE  
EMERY WHEEL,**

at the prices and in the sizes given below. This Wheel is of a special grade, made for standard use upon cast iron edging. It is fully warranted to be, in all respects, as good a wheel as any wheel made, and to stand as much speed, and as much use and abuse as any wheel made, excepting none. Try it, and spite of your prejudices it will please you.

Terms, strictly cash, 30 days after shipment, and in the meantime you may use the wheel free, and

**WEAR IT OUT IF YOU CAN, AND RETURN THE HUB FOR PAY.**

16 inch x 2 inch... \$8.00 18 inch x 2 inch... \$11.00  
16 inch x 2 1/2 inch... 10.50 18 inch x 2 1/2 inch... 14.50  
16 inch x 3 inch... 11.50 18 inch x 3 inch... 17.50  
No other sizes at proportionately low prices.

**HEATON EMERY WORKS,**  
BALLSTON SPA, N. Y.

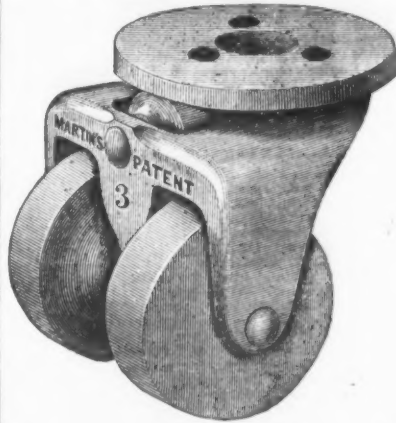
ALBANY, N. Y., March 25, 1881.

**EMERY.**

Large stock on hand, especially suited to Saw and Shovel Manufacturers, at bottom prices. Importers and Manufacturers of  
**PURE TURKISH EMERY.**  
**IRVINE, TOWNSEND & CO.,**  
123 Chambers St., New York.  
Send for quotations and samples.

## Office of PHOENIX CASTER CO.,

Indianapolis, Ind.



George A. Ruhleman & Co., St. Louis, Mo., have sold our Casters as follows:

1878.....Amount, \$14.55

1879....." 246.76

1880....." 710.53

Our Caster is no experiment. The people

will have it, if it does cost more than the shams on the market. Eight-inch Mill Files are no better stock. Introduce yourself to these goods by a very small stock order of our selection. Terms, 60 days. Ship them back if they fail in your esteem. Send for catalogue.

**PHOENIX CASTER CO.,**  
Manufacturers,  
INDIANAPOLIS, IND.



Our Drawer is so uniform, ample, strong, and secure, that it is driven all competition from the field.



WROUGHT IRON ADJUSTABLE

St. Louis, March 12, 1881.

Please send us 100 Daisy Stove Trucks.

**EXCELSIOR MFG. CO.**

**TUCKER & DORSEY,**

MANUFACTURERS,  
INDIANAPOLIS, IND.

**HANSON & VAN WINKLE, Sole Agents for**

**Weston Dynamo Electroplating & Electrotyping Machines, Newark, N. J.**

For Nickel, Bronze, Brass, Copper and Silver Plating.

Over 1000 machines in use. Are used by all leading stove manufacturers.

Experienced men sent to put up machines and instruct purchasers.

INFRINGEMENTS.

We call attention to infringements of the Weston Machine in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

MANUFACTURERS OF  
Cast Nickel Anodes, Pure Nickel Salts, Polishing Materials.

Manufactory, Newark, N. J.

New York Office, 92 and 94 Liberty St.

## MORSE TWIST DRILL AND MACHINE CO.

NEW BEDFORD, MASS., Sole Manufacturers of

Morse Patent Straight-Lip Increase Twist Drill,  
Beach's Patent Self-Centering Chuck, Solid and Shell Reamers,

**BIT STOCK DRILLS,**

DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER

AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS.

DRILL GRINDING MACHINES. TAPER REAMERS, MILLING

CUTTERS AND SPECIAL TOOLS TO ORDER.

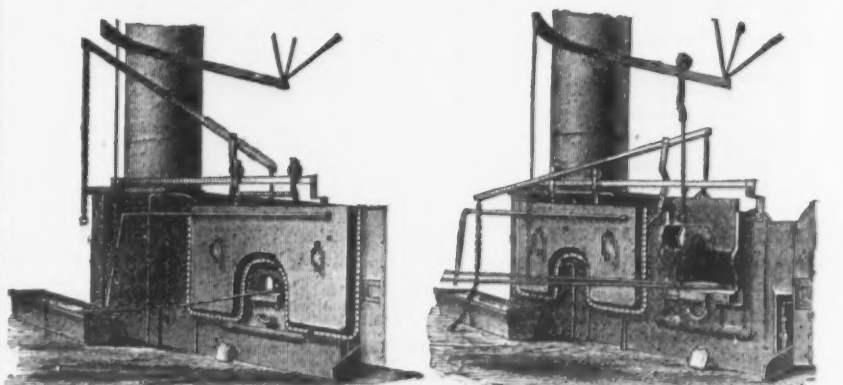
All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt.

EDWARD S. TABER, Treas.



## McDONALD'S PATENT SHIELD.



For Protecting the Men from Heat when Working in Front of  
Puddling, Heating and other Furnaces.

**H. McDONALD, Patentee,**

MANAGER SLIGO ROLLING MILLS,

**PITTSBURGH, PA.**

**SOAPSTONE FACINGS FOR FOUNDRIES,**

And TALC for Manufacturers of Paper and Rubber Goods.

**JOHN G. PORTER, 405 Pearl Street, N. Y.**

Agent for A. B. FREEMAN & SON.



## Special Notices.

SECOND-HAND  
and NEW TOOLS.

## June List No. 4.

The following new and improved Machinery Tools for future delivery:

- 13 in. sw. 7 1/2 ft. Screw cutting Lathes. July 1.
- 13 in. sw. 6 ft. Screw cutting Lathes. Sept. 1.
- 26 in. sw. 11 ft. Screw cutting Lathes. Sept. 1.
- 26 in. sw. 16 ft. Screw cutting Lathes. Sept. 1.
- 26 in. sw. 16 ft. Screw cutting Lathes. Aug. 15.
- Iron Planer to plane 5 ft. long 26 in. wide. Sept. 1.
- Iron Planer to plane 7 ft. long 26 in. wide. Sept. 1.
- 20 in. Upright Drills. Aug. 10.
- 20 in. Upright Drills, back gear. Aug. 10.
- 15 in. Upr. Drill, bk. gear and self feed. July 10.
- 26 in. Upr. Drill, bk. gear and self feed. Sept. 10.
- The following for prompt delivery:
- 15 in. Upr. Drill, 15 ft. swing by 30 in. face; has gear-cutting attachment. Second-hand.
- 13 in. sw. 4 ft. bed Scr-cut. Lathes. Second-hand.
- 12 in. sw. 6 ft. bed Scr-cut. Lathes. Second-hand.
- 4 Foot Lathes, 4 in. to 10 in. swing. Second-hand.
- 13 Hand Lathes, 7 to 30 in., different lengths. Second-hand.
- 1 New 4-spindle Drill Press.
- 1 Wall Drills, heavy. Second-hand.
- 1 Pratt & Whitney Cam Cutter, 2 heads; sd hand.
- 1 Milling Machine, Lincoln pattern. Second-hand.
- 1 Manhattan Arms Co. Millers. Second-hand.
- 1 Phoenix Millers. Second-hand.
- 1 Face Milling Machine. Second-hand.
- 1 Pratt & Whitney Screw Machines; sd hand.
- 1 Screw Head Slicer. Second-hand.
- 1 Second hand Profiling Machine.
- 1 2 ft. x 12 in. Iron Planer. Second-hand.
- 1 3 ft. x 20 in. Iron Hand Planer. Second-hand.
- 1 12 in. Shaping Machine, Ohl make. New.
- 1 6 in. Shaping Machine, Heavy. Second-hand.
- 1 Power Hammer. Second-hand.
- 1 Steam Hammer, 11 x 16 cylinder. Second-hand.
- 1 Jeweler's Power Roller. Second-hand.
- 1 Boiler Plate Power Punch. Second-hand.
- 1 Double-Acting Presses, for power. Nearly new.
- 1 Single-Acting Presses, for power. Nearly new.
- 12 Foot Presses. Nearly new.
- 1 Bliss & Williams Power Punch. Nearly new.
- 1 Medium Power Punching Press. Second-hand.
- 1 Small Power Punching Press. Second-hand.
- 1 Foot Punch, with bench. Second-hand.
- 1 Taft's Power Shear, 4 in. blade. Nearly new.
- 1 Hand Shear. Second-hand.
- 1 Pulley Polishing Machine. Second-hand.
- 1 Horizontal Drilling Lathes, 24 in. swing, 12 ft. bed.
- 1 Bolt Cutter, common old style. Second-hand.
- 1 Straightening Machine, wood bed. Second-hand.
- 1 Upright Boring Bar, 1/2 in. diam., self-feed; sd-hd.
- 1 Horizontal, 1/2 in. diam. self-feed; sd-hd.
- 1 Bolt Pointing Machine. Second-hand.
- 1 Pulley Forging Machine. Second-hand.
- 1 Tumbling Barrels. Wood. Second-hand.
- 1 Richards Indicator.
- 1 Cranes. Second-hand.
- 1 12 in. Horizontal Engine. New.
- Lot of Forges, Old Lathes, Planer and Lathes Tools, Mandrels, Blacksmith and other Tools, also some Woodworking Machinery.

For sale by  
**The Geo. Place Machinery Agency,**  
121 Chambers and 103 Reade Sts.,  
NEW YORK.

## Notice to Bridge Builders.

BIDS FOR AN IRON OR WOODEN  
BRIDGE.

By authority of the Court of County Commissioners of Tuscaloosa County, Alabama, bids from responsible parties are requested to be transmitted to a Special Term of said Court, to be held on the 7th day of July, 1881:

1. A proposition to construct a good substantial IRON BRIDGE over the Black Warrior River, connecting the towns of Tuscaloosa and North-Port.
2. A proposition to construct a good and substantial WOODEN BRIDGE over said river at said point.
3. A proposition to buy the old bridge site, piers, and franchise now owned by the County of Tuscaloosa.

It is desired that the proposals will be made so as to include, and also to exclude, the repairs of the present brick piers, or partially to substitute iron piers therefor. The length of the old bridge recently destroyed by storm was about 640 feet.

N. H. BROWNE,  
Judge of Probate.

Tuscaloosa, Ala., June 13, 1881.

Bissell & Welles,  
Wholesale Hardware Auctioneers.

83 Chambers and 65 Reade Sts., N. Y.  
Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and Importers.

The Cornwall & Paterson Mfg. Co.,  
Manufacturers of  
MACHINERY

For making Rivets, Escutcheon Pins, Moulding Nails, Etc.  
Also DIES and PATTERNS made to order.  
P. O. address, SAUGATUCK, CONN.  
Factories: Westport, Conn.

NEW MAP OF THE  
MENOMINEE IRON RANGE.

Scale, 3/4 in. to mile. Size, 35 x 55.  
Mounted on rollers, or on cloth in cases.  
Price, \$6.00.  
Sent to any part of the United States free of freight.  
SILAS CHAPMAN, Milwaukee, Wis.

## For Sale.

Hardware stock in Western New York. Will sell Hardware without Tin Shop, if desired. Stock clean and in good shape. Will invoice about \$3000. A rare chance, and good reasons for selling.  
Address, S. A. M.,  
Office of The Iron Age, 83 Reade St., New York.

## Wanted.

A position as salesman, by a young man having 7 years' experience in the Iron and Steel business in Philadelphia.  
Address,  
Office of The Iron Age, 220 S. 4th St., Phila., Pa.

## Special Notices.

## New and Second-Hand

## MACHINERY.

One Horizontal Engine, 15 1/2 in. x 30 in. Todd & Raftery.  
One Horizontal Engine, 3 in. x 26 in.  
One Beam Corliss Engine, 300 H. P.  
Portable Engines from 10 to 25 H. P.  
Two Horizontal Return Tub. Boilers, 200 h. p. each.  
One Hor. Tubular Boiler, 6 ft. x 14 ft. 67 1/2 in. tubes.  
Two Hor. Tub. Boilers, 4 1/2 ft. x 13 1/2 ft., 43 1/2 in. tubes.  
One Locomotive Steel Boiler, 30 h. p.

## MACHINISTS' TOOLS.

Twelve Lathes, 22 x 12. New.  
Ten Lathes, 18 x 8. New.  
One Cameron Pump, No. 2.  
One Styles & Parker Foot Press.  
One Root Gas Exhauster, No. 3/4.  
One Lathe, 24 in. x 13 ft.  
One Upright Drill, 32 in. Pond.  
One Milling Machine. Pratt & Whitney.  
One Tapping Machine, 6 in. Saunders' Sons.  
One Hydraulic Press, 5 inch ram.  
One 100-ton Hydraulic Press and Pump.  
One Knowles Special Pump, No. 7.  
One Bliss & Williams Foot Press.  
One Peck, Stow & Wilcox Foot Press.  
A large stock of Shafting, Pulleys, Hangers and Miscellaneous Machinery.  
One Upright Drill, 36 inch.  
One Burleigh Rock Drill, No. 4. New.  
One Hotchkiss Compressed Air Hammer.  
One 100-ton Hydraulic Press, all sizes.  
One Daniels Planing Machine.  
Three pair Fairbanks' Scales, 2500 lbs. each.  
One Pipe Cutting Machine.  
One pair Paper Rolls.

**J. GRAY'S MACHINERY DEPOT,**  
37 Dey Street, New York, U. S. A.

THE COLUMBIA FOUNDRY  
AND MACHINE WORKS,

If not sooner disposed of, will be sold at  
**PUBLIC SALE,**  
on the premises, at 3 p. m., June 30th, 1881.  
Location—Bridge and Commerce Streets, Columbia, Lancaster County, Pa.  
Lot 220 ft. front, 125 ft. deep. Machine Shop 60 x 40, with lathe, in second story, and Smith Shop 34 x 28, with Engine and Boiler rooms attached. Foundry 75 x 53, with two Cranes and Brass Furnaces; all Brick Buildings, slate roofs.  
Also, one Frame Saw, 20 ft. long, 48 x 28, slate roof. Drawings and Patterns for Blast Furnace and Rolling Mill work, Gas Works, Sugar Apparatus, Steam Engines and Machinery. Works established 1835. New Shop 60 x 72. Shipments over competing Railroads. Undersigned have run the works continuously since 1870, and are doing a good business. Sale positive. Cause for sale is solely to dissolve partnership.  
PERROTTE & HOYT, Columbia, Pa.

## TAGGERS' IRON.

\$35,000 WANTED for the manufacture of taggers iron and tin, 38 gauge, from a waste material at small cost. Or will give liberal bonus to party organizing company and raising capital. It is a monopoly. No new experiment. Cash sales for good at large profit as fast as manufactured. Demand unlimited. Money wanted for plant and to extend business. Factory now running.  
Address, TAGGERS' IRON,  
Office of The Iron Age, 83 Reade St., New York.

## Wanted.

A salesman well posted in cutlery, to sell the Western jobbing trade. An acquaintance with the trade necessary.  
Address, with references, &c.,  
A. J. ALBERT, JR. & CO.,  
8 South Charles street, Baltimore.

## Wanted.

By a respectable young man, a position as Shipping or Order Clerk, Packer or Porter, or in any capacity where he can be usefully employed. Is thoroughly posted in the General Hardware Business, and can furnish the best of references.  
Address, F. A. W.,  
Office of The Iron Age, 83 Reade St., New York.

## Iron Shears Wanted.

Parties having Shears strong enough to cut 2 1/4 square iron cold, to dispose of, address with full description, price, &c.  
WOOD, SMITH & CO.,  
Fort Plain, N. Y.

## Wanted.

By a Philadelphia importing house, an experienced Salesman, who thoroughly understands the Tin Plate and Metal business. Address, with age and references,  
P. O. BOX 1698,  
Philadelphia.

## Wanted.

Two Good Hardware Clerks,  
in a Hardware store in Pennsylvania. Address, with references,  
P. O. BOX 262,  
Lewistown, Pa.

## Wanted.

A person competent to act as superintendent of the Wrightsville Hardware Co.'s works. Manufacturers of building hardware, toys and novelties in bronze, iron and brass. Also one or two skilled and competent pattern makers. Steady employment will be given. Address,  
WRIGHTSVILLE HARDWARE CO.,  
Wrightsville, York Co., Pa.

## WANTED.

In Philadelphia, by a house in the steel trade, a salesman familiar with the business. Address,  
STEEL AGENCY, P. O. Box 4743, New York.

WANTED—Engagement with an iron manufacturing firm, either as salesman, agent, superintendent of works, or general business manager. References given when required.  
Address, E. McMillin, Pomeroy, Ohio.

WANTED—A situation as Shingler in a Rolling Mill, by a man accustomed to doubling muck and scrap iron. Strictly sober.  
JEREMIAH MCCARTHY, McKeesport, Pa.

WANTED.—A position to sell Hardware on commission, through New England States and Canada, in connection with other goods. Trade already established. Start about Aug. 15. Best of reference given. Address, CHAS. F. HOAGLAND, Dover, Morris County, N. J.

TO STOVE MANUFACTURERS,  
Wanted by a practical Stove Pattern Fitter, a situation as foreman. Best of references. Address  
J. L.  
Office of The Iron Age, 83 Reade St., New York.

**Sanderson Bros. Steel Co.**  
A limited number of bars for sale by  
EDWARD FRITH & SON,  
241 Pearl street, New York.

## Special Notices.

## For Sale.

Ten Double Acting Power Punching Presses, At order. Eight Single Acting Power Punching Presses. At order. Most of the double acting presses are the No. 3 Waterbury Press; the single acting, No. 2. One large Bliss & Williams Punching Press. One hundred and twenty-seven Foot Presses in A. order, most of them square slides. Address, THE GEORGE PLACE MACHINERY AGENCY, 121 Chambers and 103 Reade Sts., N. Y.

## For Sale.

One of the most improved patent rights in Breech-loading Fire Arms. Fires 15 shots per minute. A good working model can be seen or particulars sent on application to  
CHAS. FOEHL,  
547 New Market St., Philadelphia, Pa.

## For Sale.

Foundry and Machine Shops, employing 40 men, located in the most prosperous railroad center in the West. Everything new and in first-class order. Value of property about \$25,000. Satisfactory reasons given for selling.  
Address for particulars,  
WESTERN,  
Office of The Iron Age, 83 Reade St., New York.

## For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas.  
Address  
HARDWARE,  
Box 366, Salina, Kansas.

## NUT AND BOLT MACHINERY

## For Sale.

Second-hand Lewis, Oliver & Phillips Header.  
Pratt & Whitney Tire Blank Header.  
Also, over ONE HUNDRED different sizes and patterns of Bolt Cutters, Tappers, Nut Machines, &c.  
The only Specialists in this line in the United States.

Patentees and owners of the celebrated National Bolt Cutters.

NATIONAL MACHINERY CO.,  
Cleveland, O.

## For Sale.

The Little Schuylkill Rolling Mill,  
at Milldale, Schuylkill County, Pa., near Port Clinton, on the line of the Philadelphia and Reading Railroad, consisting of a Merchant Bar Mill in complete running order, with a splendid water power sufficient to run the mill two-thirds of the year. Engines, Boilers, Foundry and Machine Shop, with Lathes for turning rolls, and all other appurtenances necessary to commence operation at once. Together with dwellings, stables and large tract of land, to be sold low if applied for soon. For further particulars address or apply to  
J. O. RICHARDSON,  
No. 339 Dock street, Philadelphia.

## For Sale.

A Morgan, Williams & Co. 3000 lb. Steam Hammer. Has been used but little, and is as good as new.  
Poppett Valve Engine, cylinder 24 inches diameter, 4 ft. stroke; cylinder and bed plate new. Made by Robinson, Rea & Co. Extra heavy for rolling mill work. Bed plate weighs 15 tons. Everything of best workmanship and extra substantial.  
Four Housings for 16 in. rolls, with steel screws and screw boxes; all complete.  
500-lb. Peck Drop, entirely new; never used.  
20-horse power Baxter Engine.  
Also three second-hand steam pumps.  
Apply to  
OLIVER BROS. & PHILLIPS, Pittsburgh.

## Machinery for Sale.

One 24 in. Hendey Shaper. New.  
One 11 in. swing 5 ft. bed Prentice Engine Lathe. New.  
One Bolt Cutter, 1/4 in. to 1 in., with pipe dies. New.  
One second-hand Engine Lathe, 11 in. swing 7 ft. bed.  
One Rotary Hoisting Engine, 6-horse power.  
One 1-horse power and boiler, vertical.  
One 20 in. Harrison's Combined Flouring Mill. In use 6 months. Good as new.  
Five Amateur Foot Lathes. New.  
Ten Blacksmith Drills, self-feed. New.  
Write for prices and description.  
JACKSON & TYLER,  
Machinery Exchange,  
Nos. 16 & 18 N. Howard Street,  
Baltimore, Md.

## For Sale.

Ten Horse Power Baxter Engine,  
With 15-horse-power boiler attached. All improvements. Good as new.  
E. J. MORGAN,  
Bridgeport, Conn.

## For Sale.

No. 4 Root Blower.  
Bolt Header and Rivet Machine.  
Bement Turret Lathe, with Chaser Bar.  
18 in. x 12 ft. Slide Lathe, 15 in. Chuck.  
15 in. Boring Lathe. 10 ft. Pit Lathe.  
3-Column Drills, Planer Centers, Rise, &c.  
A. G. BROOKS & WINEBRENER,  
261 N. 3d St., Philadelphia.

ENGINE AND BOILER  
For Sale.

6 x 12 Horizontal Engine in good condition; also, 15-Horse Power Boiler, Heater, Pump and all other fixtures; all nearly new.  
BEECHER & PECK,  
Lock Box 122, New Haven, Conn.

TO CAPITALISTS.  
FOR SALE.

A Rolling Mill and Nail Factory, located on the Pennsylvania Railroad, in the iron and coal region of Pennsylvania, will be sold to close out an estate. The works have a capacity of 6000 tons per annum, are now in first-class running order, and have all ways done a successful business.  
Address, ADMINISTRATOR,  
Office of The Iron Age, 83 Reade St., New York.

FACTORY FOR SALE.—In Willowby street, Brooklyn, N. Y., with engines, boilers and shafting, suitable for any kind of light or heavy manufacturing purposes. Plot 26 x 60. One three-story building, fronting on three streets. Address,  
W. S. F. PRINCE, Practice Stores, Brooklyn, N. Y.

## Special Notices.

## PROPOSALS FOR WROUGHT IRON BEAMS.

ROCK ISLAND ARSENAL, Ill., June 13, 1881.  
SEALED PROPOSALS are invited to deliver on board the cars at this Arsenal before January 1st, 1882, the following bill of wrought iron beams and other shapes of wrought iron:

20,000	"	12	"	125	"	"
30,000	"	12	"	170	"	"
104,000	"	12	"	54	"	"
210,000	"	4	"	30	"	"
126,000	"	4	"	30	"	"
60,000	"	4	"	30	"	"
15,000	"	4	"	30	"	"
6,000	"	4	"	30	"	"

The required rate of delivery will not exceed 120 tons per month, but the contractor may deliver as much faster as he pleases, and he must deliver the iron somewhat in the order required for use.

Hids for a portion of the bill of iron will be accepted.

The required length for the deck and 4 inch beams is about 35 feet. Twelve of the light 12 inch beams are about 35 feet long, and the remainder of the beams are about 20 feet long, or less.

Best quality beams are required. Full bills and specifications can be obtained from the undersigned. The successful bidder will have to enter into contract and give good and sufficient bonds.

The government reserves the right to reject any or all bids, and if necessary bidders must show that they are able to perform the contract.

The successful bidder will have to enter into contract and give good and sufficient bonds. Bids from irresponsible parties who are not members or agents of firms competent to perform the contract will not be considered.

Bids will be opened at 10 A. M., July 13, 1881, and bidders not invited to bid.

D. W. FLAGLER, Maj. of Ordnance, Commanding.

PARTNER WANTED.  
Or For Sale,  
A Good Pipe & Machine Foundry,

all complete, and in good working order. Foundry brick, 118 feet by 90 feet, 25 feet high, 1 steam and 1 hand crane, a cupola, 1 Root blower, good power, pipe flasks and patterns, all in good order, with large lot of machine patterns; pattern about 30 feet by 75 feet; good office, 3 rooms. Reason for selling, want of operating capital. For particulars address,  
D. GILES & CO.,  
Chattanooga, Tenn.

## NOTICE!

## SPECIAL SALE OF

## RAZORS.

## SEE ADVERTISEMENT ON PAGE 10

OF  
BRADFORD & ANTHONY, Boston.

## HEAVY IRON WORKS WANTED.

An Eastern Manufacturing Company, doing a profitable business in heavy wrought iron structures, the manufacture and sale of which they control for the United States and Canada, wish to establish additional works, located in the West, South, Pacific Coast and Province of Ontario. Must have first-class freight advantages for receiving rolled structural and merchant iron. Address  
WM. O. DOUGLAS, Binghamton, N. Y.

## The Sherman Process Co.

## 9 Pemberton Square, Boston, Mass.,

## Issue Licenses to use the Process for the

## Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces.

The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working. See page 17 of The Iron Age of Oct. 25th, 1877.

TO INVENTORS  
AND MANUFACTURERS.THE SEMI-CENTENNIAL EXHIBITION  
OF THE  
AMERICAN INSTITUTE

OF THE CITY OF NEW YORK,  
Will open September 14, 1881. Heavy machinery will be received as early as August 23; other goods, September 6. Intending exhibitors must make early application to secure proper space and classification. For blanks and information address ORGAIN SUPERINTENDENT AMERICAN INSTITUTE, New York City.

## A Salesman

having an established trade with Hardware and Housefurnishing consumers in Texas and the Southern States, is open to extend his line in staple and special goods to sell on commission, where such goods are not already represented.  
Address, FORTESCUE,  
Office of The Iron Age, 83 Reade St., New York.

## A Superintendent of Blast Fur-

## naces and Rolling Mills,

Thoroughly acquainted with the English, Scotch and American Pig and Wrought Iron trades; also, with the foreign and home iron ore business, having a knowledge of chemistry, is desirous of representing a first-class commission house in the iron trade on the East Coast.  
Address, AGENT,  
Office of The Iron Age, 83 Reade St., New York.

## EXCHANGE.

I will exchange a large factory in Rochester, N. Y., near the depot, and on a level with it, for houses or other good property. Building of stone, 150 x 50, four floors. Lot 150 x 350 feet. Free water power, 200 horse. New turbine wheel, 90 feet head and fall. Full lines of shafting, gas and water pipes, &c., &c. A bargain for any one who can use it.  
H. L. PRATT,  
74 Chambers St., New York.

HARDWARE BUSINESS.—For Sale, stock and fixtures of a first-class Hardware and Housefurnishing Store in a thriving town of 9000 inhabitants. Northern New York. Only reason for selling, other business prevents owner from giving it attention. Established 8 years. Will be sold for the cash value of stock. No charge for good will. Part cash; balance in unencumbered real estate near New York City.  
For full particulars address  
J. H. W.,  
Office of The Iron Age, 83 Reade St., New York.

Blast Furnace Manager  
Of many years' experience in the management of blast furnaces in England and in the United States, will shortly be open to an engagement. Unexceptionable references.  
Address, MANAGER,  
Office of The Iron Age, 83 Reade St., New York.

TWO MANUFACTURERS OF WOOD-WORKING Machinery, or Engineers' Supplies. We are prepared with a large established trade to represent parties in above lines at St. Louis, Chicago or New Orleans, either as agents or purchasers, at jobbing prices. Early correspondence solicited.  
CURTIS & CO. MFG. CO.,  
811 to 813 N. Second St., St. Louis, Mo.

FOR SALE CHEAP.—Foundry, Machine, Blacksmith, Boiler and Wood Shops, with engine and boiler, line shafting and pulleys, Mackenzie cupola and blower, forges, &c. Address,  
E. M. BIRDSALL, Penn Yan, N. Y.

## Special Notices.

## PROPOSALS

For Lamps, Mineral Oil, Extra Parts  
of Lamps, Wicks, &c., for the

## U. S. Army.

DEPT. QUARTERMASTER'S OFFICE,  
PHILADELPHIA, PA., June 7, 1881.

SEALED PROPOSALS in TRIPPLICATE, SUBJECT to the usual conditions, will be received at this office, and at the office of each of the Depot Quartermasters at New York City, Jeffersonville, Ind., and San Francisco, Cal., until 12 m. at this office, 12.05 p. m. at New York City, 11.10 a. m. at Jeffersonville, and 9 1/2 a. m. at San Francisco, on July 7, 1881, at which times and places they will be opened in the presence of bidders for furnishing and delivering 3000 Army Lamps and various extra parts and iron brackets, and 25,000 gallons of Mineral Oil, having flash point not lower than 135° Fahrenheit, the bids from the Pacific Coast to be made for delivery at the San Francisco Depot of such portion of the supplies as may be required for the service on the Pacific Coast (about one-sixth) and all other bids to be made for delivery of the supplies (except oil) at either the Philadelphia, New York, or Jeffersonville depots, and for the delivery of Oil at the Jeffersonville Depot only.

Bidders will state in what quantities they will make deliveries, and how soon they will commence and complete delivery of entire lot bid for.

The lamps, brackets and extra parts must be of prescribed specifications, and patterns as shown in drawings, and the Oil must be of the standard herein specified.

Proposals will be received for a less quantity of the supplies than is required.

The government reserves the right to reject any or all proposals, and to require deliveries to be made at whichever of the depots named may be deemed most advantageous to the public service.

A preference will be given to articles of domestic production and manufacture, consideration that may be quality being equal, and such preference will be given to articles of American production and manufacture produced on the Pacific Coast to the extent of the portion of the supplies required by the public service there.

Blank proposals and specifications, including the number or quantities of the Lamps of each kind required, extra parts, brackets, &c., and manner of bidding, and any further information that may be desired, will be furnished by either of the Depot Quartermasters mentioned, on application.

Proposals should be addressed to either the Depot Quartermaster at Philadelphia, New York City, Jeffersonville, or San Francisco, and be enclosed "Proposals for Lamps," (or Oil, or whatever is bid for). A copy of this advertisement and of the specifications should be attached to each bid and be mentioned therein as forming a part thereof.

Each bid must be accompanied by a bond (of the form prescribed) in the penal sum of \$1000 that the bidder will not withdraw his proposal until the opening of bids, and that if his bid is accepted and the contract for which he has bid is awarded him, he will enter into a contract and bond agreeably to the terms of his proposal within 30 days after date of notification of acceptance of his bid and award to him of the contract.

D. M. RUCKER, Asst. Q. M. Gen., U. S. A.,  
In charge of Depot.

Having Purchased the Extensive Works  
OF THE  
NEW CASTLE MFG. CO.,

## New Castle, Pa.,

and greatly enlarged it by the removal of our complete stock of the most modern tools from our late works at Sharpsburgh, Pa., we are prepared to execute in the most rapid and thorough manner any work placed in our hands.



# Trade Report.

OFFICE OF THE IRON AGE.  
WEDNESDAY EVENING, June 29, 1881.

Wall street markets have been active during the week, but irregular and generally lower. Western Union advanced on the dismissal of the suits against the company and on the announcement that the deferred dividends would be paid. The Wabash was favorably influenced, and the Illinois Central correspondingly depressed, by the fact that the former had obtained control of the Cairo and Vincennes road. Prices were much depressed by the publication of the semi-annual reports of the Lake Shore, Michigan Central and Canada Southern railroads, all of them of an unfavorable tenor, and free sales of the two latter followed the failure of expected dividends. A sharp rise in Oregon Navigation was succeeded by a fall of 8%. An advance likewise took place in elevated railroad shares, on a report that money had been obtained by the Manhattan Company wherewith to meet its July obligations—a rental of \$1,337,500—but as the week closes Metropolitan falls off 3½%, to 89½, a conflict being in progress, in which the issue turns on the payment or non-payment of the half-yearly dividends next Friday. The market for the trunk-line shares became feverish on the acknowledged cutting of rates on west-bound freights, as shown by a letter from Pool Commissioner Fink, and a raid on Tuesday sent these stocks to the lowest prices in the week.

Government bonds were firm. The amount of 5 per cent. coupon bonds received for continuance at 3½% to date, including those presented at the London agency, aggregates about \$39,000,000. A statement prepared in the office of Register of the Treasury Bruce shows that there have been issued of the extended 5% to date on account of registered bonds, \$125,991,200; on account of coupon, \$31,834,350; total, \$217,825,550.

Railroad bonds are dull and prices irregular. State stocks were dull and generally lower, with dealings principally in Tennessee and Alabama issues. Foreign exchanges have been dull. The posted rates remain 4.84½ and 4.86½, with actual business at 4.83½ @ 4.84 for bankers' 60 day bills, and 4.86½ @ 4.86½ for cable transfers.

Money continues easy at 3 @ 3½ per cent. on stocks; time loans, 2 @ 4; prime mercantile paper, 3 @ 4½ per cent.

The importations of specie and bullion at this port during the week ending June 24 were \$26,266, consisting of \$11,464 in gold and \$14,802 in silver, as against a total of \$77,868 for the week ending June 26 last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year:

	Since January 1—1881.	1880.
Gold.....	\$26,145,451	\$1,813,128
Silver.....	1,537,859	2,780,515
Total.....	\$27,683,310	\$4,593,643
	Since August 1—1880-81.	1879-80.
Gold.....	\$6,424,419	\$7,841,100
Silver.....	4,099,106	5,738,069
Total.....	\$10,523,525	\$13,579,169

The bank return for the week shows a gain of \$1,265,800 in surplus reserve, which now stands at \$9,274,200, against \$17,483,200 at this time last year, and \$10,040,600 at the corresponding period in 1879. The loans show a loss this week of \$1,075,900; the specie is up \$1,480,500.

As above noted, stocks have been active during the week, but generally lower. Comparing sales at the opening with those at the close, the principal changes are as follows: Advanced—Hannibal and St. Joseph, 3½; Hannibal and St. Joseph preferred, 1¼; Declined—Canada Southern, 7½; New York, Lake Erie and Western preferred, 1½; Louisville and Nashville, 1¼; Western Union, 1; Pacific Mail, 1½; Northwestern, 1½; New Jersey Central, 1½; Central Pacific, 2½; Ohio Central, 2½; Lake Erie and Western, 3; Peoria, Decatur and Evansville, 2½; Lake Shore, 1¼; Cleveland, Columbus, Cincinnati and Indianapolis, 3½; Michigan Central, 5½; Ohio and Mississippi, 2½; New York, Ontario and Western, 2½.

Government bonds were strong throughout, closing at the following quotations:

	Bid.	Asked.
U. S. 6's 1881 registered.....	107½	—
U. S. 6's 1881 coupon.....	107½	—
U. S. 5's 1881 registered.....	107½	—
U. S. 5's 1881 coupon.....	107½	—
U. S. 4½'s 1891 registered.....	111	111½
U. S. 4½'s 1891 coupon.....	111	111½
U. S. 4's 1907 registered.....	117½	118
U. S. 4's 1907 coupon.....	117½	118
U. S. Currency 6s 1895.....	130	—
U. S. Currency 6s 1896.....	130	—
U. S. Currency 6s 1897.....	130	—
U. S. Currency 6s 1898.....	130	—
U. S. Currency 6s 1899.....	134	—
"Sixes" continued.....	107½	107½
"Fives" continued.....	109½	109½

The following is an analysis of the bank totals of this week compared with that of last week:

	June 28.	June 25.	Comparison.
Loans.....	\$245,566,500	\$245,490,700	Dec. \$1,075,800
Specie.....	77,611,000	77,091,500	Inc. 519,500
Legal t'd's.....	18,474,300	18,098,900	Dec. 375,400
Total reserve.....	94,085,800	95,189,400	Inc. 1,093,600
Deposits.....	344,307,500	343,649,800	Dec. 657,700
Reserve required.....	86,076,000	85,910,300	Dec. 165,700
Surplus.....	8,008,400	9,274,200	Inc. 1,265,800
Circulation.....	19,305,300	19,144,300	Dec. 161,000

The following were the closing quotations for Mining Stocks:

	Bid.	Asked.
Amie.....	40	42
Alco.....	7.00	7.25

Alta Mont.....	1.80	1.90
American Flag.....	17	17
Bell Isle.....	40	40
Bonanza C.....	15	15
Big Pittsburgh.....	1.70	1.80
Bull Dom.....	2.00	2.00
Bulwer.....	2.60	3.00
Bassick.....	12.00	12.00
Boulder C.....	40	50
Boston C.....	40	50
Calaveras.....	16	16
Cale. B. H.....	1.60	1.90
California.....	1.25	2.00
Climax.....	87	87
Caribou.....	3.10	3.50
Consolidated Virginia.....	2.75	2.80
Consolidated Imperial.....	15	19
Consolidated Pacific.....	54	59
Dunderberg.....	1.45	1.50
Chrysolite.....	5.50	5.87½
Cherokee.....	1.50	1.60
Catalpa.....	1.50	1.50
Crescent.....	1.05	1.05
Dun'berg.....	80	80
Dahlonaga.....	7	7
Dunlin.....	35	35
Findley.....	27	27
Pa. Desmet.....	9.00	9.00
Great Eastern.....	26	28
Gold Stripe.....	2.60	2.60
Goodshaw.....	40	48
G' Prize.....	5	6
Granville.....	5	6
Green Mountain.....	5.50	5.50
Huall.....	87	90
Horn Silver.....	16.00	16.00
Hibernia.....	61	61
Independence.....	30	30
Iron Silver.....	1.95	2.00
Lacrosse.....	28	30
Leadville.....	1.30	1.30
L. Chief.....	1.30	1.45
Little Pitts.....	2.25	2.85
Mariposa.....	1.25	1.25
Miner Boy.....	65	65
Moose Silver.....	1.60	1.60
Moore.....	1.25	1.30
Navy.....	65	68
N. Bell.....	1.50	1.50
Ori. and Mil.....	1.00	1.00
Red Elephant.....	19	20
R. Sub.....	18	20
South Hite new.....	2.75	2.75
S. Bulwer.....	30	30
San Pedro.....	4.25	4.25
S. Nevada.....	10.00	10.00
Silver Cliff.....	5.10½	5.10½
Sutro.....	1.65	1.75
Stormont.....	2.50	3.00
Spr'g Val.....	2.50	3.20
St. L. No. 1.....	1.50	1.50
St. L. No. 2.....	1.65	1.65
St. L. 1 and 4.....	1.70	1.75
St. L. 2 and 4.....	6.50	6.50
Tuscarora.....	35	35
Unadilla.....	9	12

The Mexican Mining Company of San Francisco has levied an assessment of \$1 a share.

## GENERAL HARDWARE.

The volume of business has increased largely since our last writing, and trade may be fairly stated as being unusually active for this season. Although the time has arrived when price lists and discount sheets are usually revised for the fall season, the changes announced are few. The manufacturers of Coe's genuine Wrenches have confirmed existing prices.

Foreign Hardware is in active request, but no changes in values have occurred during the week.

The demand for Nails is not so active as holders would like to see it, and the tone of the market lacks strength. Although no change has been made in the card rate, buyers of fair-sized lots would have no difficulty in placing their orders on the basis of \$2.90 for 10d. to 60d. We quote, according to quantity, \$2.90 @ \$3.05, net.

The manufacturers of Wood Screws have in press a circular under date of July 1, 1881, confirming existing prices, viz.:

	Dis. per cent.
Flat Head Iron Wood Screws.....	40
Round Head Iron ".....	35
Flat Head Brass ".....	40
Round Head Brass ".....	30

Saturday being a short business day, and the 4th of July falling on Monday next, an effort is being made in the Hardware and Metal trades to close their places of business at 6 p. m. on Friday next, the 1st proximo, to reopen on the morning of Tuesday, July 5, thereby giving the employees and all concerned, three days rest. The paper containing this proposition, at an early hour this afternoon, had received the signatures of about 50 establishments, and there is not much doubt that the motion to close on Saturday next will prevail.

John Sowle, Boston, Mass., manufacturer of Patent Friction Spring Hinge and Fixtures for Transom Lights, &c., has appointed Brower & Leeds, No. 81 Murray Street, agents for New York and Philadelphia.

We have received the following circulars: To the Hardware Trade: Our notice has been directed to a printed circular to which is appended the name of Goodell Company, alleging exclusive licenses under letters patent granted to Mr. Geo. Geer, June 14, 1881, for an Apple Parer, Corer and Slicer, which circular makes an unwarrantable attack on our trade. This circular omits to state that the claims of the Geer patent cover only special combinations of a very narrow character. The machine built by us is protected by letters patent, No. 243,254, issued to us as assignees of C. Raymond Heilmann, June 21, 1881. The comparative merits of the two machines appear upon placing them side by side. The fact is, and we propose to make our assertion good, our machine does not infringe on any one of Geer's narrow claims. We will protect all purchasers of them to the fullest extent.

PENN HARDWARE CO.  
Reading, Pa., June 27, 1881.

To the Hardware Trade: We have the pleasure of announcing that we have now in process of manufacture, and will have ready in a short time, an entirely new Apple Parer, Corer and Slicing Machine called "The Victor." This machine will either "pare, core and slice," "pare and core," or "core only," whichever is desired. Having exercised great care in its construction, we have been enabled to overcome all the defects of the various machines of this character now in the market, and can give the trade a perfect "Apple Parer, Corer and Slicer." Circulars with description and mode of operation will be mailed you in a few days, and until then we would respectfully request you to withhold your orders, being well assured we can give you, at a

reasonable price, the best machine of the kind yet invented (without infringing upon the patent rights of other makers). Respectfully, READING HARDWARE CO.  
Reading, Pa., June 25, 1881.

We print below the revised price list of Files and Rasps, adopted by the File Manufacturers' Association, and which will take effect on the 1st prox. The discounts remain as before. The new list shows an advance on a general assortment of about 6 per cent.

The members of the File Manufacturers' Association are as follows:

NICHOLSON FILE CO., Providence, R. I.  
WESTERN FILE CO., Beaver Falls, Pa.  
HENRY DISTON'S SONS, Philadelphia, Pa.  
NEW AMERICAN FILE CO., Pawtucket, R. I.

MADDER & COCKAYNE FILE CO., Middletown, N. Y.

HELLER & BROS., Newark, N. J.

CLARK & DRAPE, Sing Sing, N. Y.

G. & H. BARNETT, Philadelphia, Pa.

HISCOX FILE MFG. CO., West Chelmsford, Mass.

KEARNEY & FOOT, Paterson, N. J.

THE J. BARTON SMITH CO., Philadelphia, Pa.

PHILADELPHIA FILE WORKS (Alexander Krumbhaar, proprietor), Philadelphia, Pa.

CHELSA FILE WORKS (H. L. Butts, proprietor), Norwich, Conn.

G. BICKS & SON, Syracuse, N. Y.

CHARLES SPENCE & CO., Sing Sing, N. Y.

THE THRIFT FILE WORKS (Christian Henchell, proprietor), Philadelphia, Pa.

PRICE LIST OF FILES AND RASPS.

Adopted (at a meeting held in New York, March 24th, 1881), by the File Manufacturers' Association of the United States, as their selling list, to take effect on and after July 1st, 1881.

MILLSAW, ROUND AND SQUARE.

Inch.	Bastard.	ad Cut.	Smooth.
1.....	\$1.40	\$1.65	\$1.75
2.....	1.85	2.10	2.20
3.....	2.10	2.35	2.45
4.....	2.35	2.60	2.70
5.....	2.60	2.85	2.95
6.....	2.85	3.10	3.20
7.....	3.10	3.35	3.45
8.....	3.35	3.60	3.70
9.....	3.60	3.85	3.95
10.....	3.85	4.10	4.20
11.....	4.10	4.35	4.45
12.....	4.35	4.60	4.70
13.....	4.60	4.85	4.95
14.....	4.85	5.10	5.20
15.....	5.10	5.35	5.45
16.....	5.35	5.60	5.70
17.....	5.60	5.85	5.95
18.....	5.85	6.10	6.20
19.....	6.10	6.35	6.45
20.....	6.35	6.60	6.70

Extras.

Mill double cut and mill pointing advance 1 inch.

FLAT AND WARDING.

Inch.	Bastard.	ad Cut.	Smooth.
1.....	\$1.50	\$1.75	\$1.90
2.....	1.70	2.00	2.15
3.....	2.00	2.35	2.50
4.....	2.30	2.65	2.80
5.....	2.60	2.95	3.10
6.....	2.90	3.25	3.40
7.....	3.20	3.55	3.70
8.....	3.50	3.85	4.00
9.....	3.80	4.15	4.30
10.....	4.10	4.45	4.60
11.....	4.40	4.75	4.90
12.....	4.70	5.05	5.20
13.....	5.00	5.35	5.50
14.....	5.30	5.65	5.80
15.....	5.60	5.95	6.10
16.....	5.90	6.25	6.40
17.....	6.20	6.55	6.70
18.....	6.50	6.85	7.00
19.....	6.80	7.15	7.30
20.....	7.10	7.45	7.60

Extras.

Cants (double) advance 1 inch.

Feather edge, do., advance 3 inches.

HAND, HALF ROUND, PILLAR AND THREE SQUARE.

Inch.	Bastard.	ad Cut.	Smooth.
1.....	\$1.60	\$1.85	\$2.00
2.....	1.85	2.10	2.25
3.....	2.10	2.35	2.50
4.....	2.35	2.60	2.75
5.....	2.60	2.85	3.00
6.....	2.85	3.10	3.25
7.....	3.10	3.35	3.50
8.....	3.35	3.60	3.75
9.....	3.60	3.85	4.00
10.....	3.85	4.10	4.25
11.....	4.10	4.35	4.50
12.....	4.35	4.60	4.75
13.....	4.60	4.85	5.00
14.....	4.85	5.10	5.25
15.....	5.10	5.35	5.50
16.....	5.35	5.60	5.75
17.....	5.60	5.85	6.00
18.....	5.85	6.10	6.25
19.....	6.10	6.35	6.50
20.....	6.35	6.60	6.75

Knife and high back half round advance 1 inch.

Cross and slotting advance 2 inches.

WOOD FILES AND RASPS.

Cabinet files Half-round Flat wood rasps.

Inch.	Half-round.	Flat wood.
6.....	\$3.90	\$2.35
7.....	3.50	2.10
8.....	3.25	1.90
9.....	3.00	1.70
10.....	2.75	1.50
11.....	2.50	1.30
12.....	2.25	1.10
13.....	2.00	0.90
14.....	1.75	0.70
15.....	1.50	0.50
16.....	1.25	0.30
17.....	1.00	0.10
18.....	0.75	0.00
19.....	0.50	0.00
20.....	0.25	0.00

Flat wood files take flat bastard price.

Half-round wood files take ½-round bastard price.

SAW FILES.

Inch.

Taper, single cut.

Taper, double cut to point.

Slim taper, single cut.

Slim taper, double cut to point.

Pit saw, blunt, single cut.

Band saw, taper, single cut.

Gin saw, taper, single cut.

Hook tooth, blunt, single cut.

Extras.

Round off takes hook tooth price.

Round gutting takes pit-saw price.

Tapers single cut to point advance 1 inch.

HORSE AND SHOE RASPS.

Horse.

Plain rasps.

Beveled rasps.

Tanged rasps.

Inch.



## IRON.

**Amerlean Pig.**—The better feeling in the iron market, mentioned in our last issue, continues, and the inquiry has greatly improved during the week. We hear of considerable business transpiring, the particulars of which are withheld; also, a sale of 1000 tons No. 1 Thomas, for delivery after December next, at \$24. We quote: Foundry No. 1, \$23.50 @ \$24; Foundry No. 2, X, \$21.50 @ \$22; Gray Forge, \$20.

**Scotch Pig.**—Sales of 1000 tons Scotch Iron that arrived during the week are reported, and the market is said to be in a stronger position than of late. The demand for consumption is steadily developing, and prices, in view of the late advance in ocean freights, are firm and tending upward. We quote: Eglinton, \$21; Carnbroe, \$22; Coltness, \$23 @ \$23.50; Glengarnock, \$22.50, and Gartsherrie, \$23.

**Rails.**—The inquiry for Steel Rails continues active, and sales of 6000 tons for delivery next year at \$56 at tide-water are announced. In Iron Rails no new business has come to our notice. We quote: Steel, \$56 @ \$60, according to delivery, &c., and Iron Rails, \$48 @ \$50.

**Old Rails.**—Rumors are current of sales of several thousand tons of T's at \$25, but we are unable to confirm them. In small parcels some business has transpired, but particulars are withheld. We quote nominally T's, \$25.50, and D. H., \$27.50.

**Scrap.**—No. 1 Wrought is quoted at \$27 ex-ship and about \$29 @ \$30 per yard for prime selected. Business quiet and no transactions worthy of mention reported.

We have received the following circular:

Boston, June 23, 1881.

At our creditors' meeting, held here yesterday at our request, the feeling was expressed that we should continue in business, and that the stock of Pig Iron on hand should be sold by us for their benefit. As there may have been rumors exhibited or told to you that the stock was large and would be put upon the market, thereby depressing prices and possibly for a time unsettling values, we desire to say that there was not one dissenting voice among our creditors to their controlling the entire stock, and for the sale of it at market value in the ordinary way. A committee was chosen to guarantee to the pledgees of the stock their interest, so that it can be safely said none of our stock will be sacrificed nor the market damaged by reason of our suspension. We take this opportunity to thank you for your past favors and friendly relations with us, and beg leave to offer you in lots to suit:

No. 1, X, and Gray Forge Pig Iron, here and at shipping ports.

Scotch and English Pig Iron and Scrap Iron, here and in New York.

We should be especially glad to have an opportunity to quote you prices.

Respectfully, E. P. CUTLER & Co.

## METALS.

**Copper.**—Since our last report Lake Superior Copper sold to the extent of 400,000 to 500,000 lbs. from 17½¢ down to 16½¢. We quote toward the close, 16½¢ as the price of the mines, but not unlikely it could be procured at a lower figure. There can be no doubt that the demoralized condition of the market is entirely due to the fact, now realized by buyers as well as sellers, that a very strong competitor has come forward against the Lake companies. In view of the fact that the latter have been forced, except at periods of great activity, to market a surplus abroad at lower figures than they sold their product here, the disturbing influence of any rivals whose Copper is beyond their control will be readily understood. It is difficult to see how, in the present state of affairs, Copper can escape coming near the cost fixed in the markets of the world. With a surplus which may range as high as 20 per cent. of the production, the competition between producers for the home trade must carry the price down. Out of a total of 24,869 tons of Copper produced by the Lake Superior mines in 1880, the Calumet and Hecla alone made 15,838 tons, and the following companies the quantities given: Atlantic, 1171; Central, 1013; Franklin, 1168; Osceola, 1691; and Quincy, 1848 tons, or, together, 6591 tons more, which leaves only 2140 tons to be divided by about 24 small mines. It is well known that the large mines are capable of producing Copper as low as from 10 to 12 cents per pound. They are not, therefore, in any danger of succumbing, even if forced to sell at London rates. The Lake Superior district will not, therefore, drop off in production materially, because even if the smaller companies making 10 per cent. of the output go under, the larger ones will strain every resource to make up for decreased dividends by a larger output. Let us turn now to the Arizona miners. They have, for some years to come at least, the advantage of being able to work cheaply surface deposits of ores of much higher grade, and so easily reduced that a copper of 95 to 97 per cent. is made in one smelting. All accounts from trustworthy sources agree that the quantities in sight are so large that for the next few years a very large production can be maintained. We have been assured—and from what we know approximately of the cost of reducing ores we are inclined to credit the statement—that at the Copper Queen Mine, in Arizona, the crude metal can be now made for 4¢ to 4½¢ per lb., and that on the basis of that price it can be placed in this market at 8¢. Making allowances, it will be conceded, therefore, that Arizona is able to compete with Lake Superior, and both are in a position to undersell any other producing district in the world in the London market. Under such conditions the recent decline seems no more than natural, and the only thing that can prevent its continuance is a consolidation of interests. Baltimore Copper is quoted 17¢, nominally. London cables Chili Bars \$60, and Best Selected \$66. "London, June 18.—An improved tone has been perceptible in the market for Chili Bars, and rather better

prices have been realized. This is not surprising, for the Chili charters for the past three weeks have been only 1500 tons, the price calculating \$50.10, without any profit, English conditions. The total charters from the 1st of January to the 15th instant have been only 16,050 tons, against 21,550 tons for the corresponding period of 1880, and 21,900 tons in 1879, showing a decrease of 5500 tons for this year compared with last, and 5850 tons under those in 1879, while the charters for the 12 months ending the 15th instant were but 35,150 tons, against 50,550 tons for the 12 months ending June 15, 1880, or a decrease of 15,400 tons. Besides this the advices from Chili state positively that the production there is only in proportion to the charters for the last 12 months, and consequently there is shown an outfall of 15,000 tons, as compared with previous years in Chili alone, to say nothing of the decrease in production of England, Sweden and Australia; these may be taken against the increased production in Spain. From what precedes it will be seen that the English papers are trying to make the most of the apparent decrease of production in Chili, and that against the large Spanish output in Andalusia they are trying to use as a set-off the decrease in England, Sweden and Australia, which, so far as we are informed, does not amount, all told, to more than one-third the Spanish yield. But what are they going to say when they learn the altered circumstances on this side, which we are giving in detail? Are they again going to ignore our new Western production as they did the Spanish output, of which we at the time gave particulars from the government export statistics? It may be very convenient to do so, but the method does not serve the interests of truth. On the contrary, it goes to strengthen the suspicion which we cannot suppress, that the English market is beginning to lose in importance more and more; but it will be a long time ere this truth will beam upon the intelligence of people who seem determined to close their eyes to stern facts. The list prices of manufactures remain nominally unchanged as below, but it is generally understood that concessions in harmony with the reduced cost of raw materials are being made: Bottoms, 29¢; Braziers, according to size, 25¢ @ 34¢; Circles, 31¢ @ 34¢; Segment Sheets, 31¢; Fire-box Sheets, 25¢; Sheathing, 26¢, and Bolt Copper, 28¢.

**Tin.**—Our market has ruled rather quiet, chiefly on account of the approaching national holidays. London has receded to \$29 @ \$29.10 on the spot. The cablegram adds: "The bears are selling aloft." Whether the operators for a fall will succeed in their endeavors to depress the market for any length of time seems doubtful to us, for the statistical position, it cannot be denied, is all that is said in favor of it on this side and in the latest mail advices from the other side to hand to-day. Next week we shall give details of the June shipments and deliveries; meanwhile our stock has not varied since June 1. The consumption for June is estimated at 700 tons, while about that much has arrived, leaving us with a stock not exceeding 2000 tons. We quote at the close Straits, 20½¢ @ 20¾¢, large lines, upon a quiet market. "London, June 18.—The better tone which we reported last week continued at the opening on Monday last, when holders were firm in their quotations of £91. 2/6, cash, the market advancing in the course of the day to £91. 12/6; but on Tuesday prices were rather unsteady, and the official quotation was £90. 15/ @ £91. 5/. On Wednesday there was little or no alteration in the state of the market; but yesterday increased business was transacted, prices ruling between £91. 5/ and £91. 15/, closing, however, flat at £91, while to-day the market has been steady, and closes at £91 @ £91. 10/ per ton." **Tin Plates.**—The market here has improved slightly, there being more inquiry and less disposition to make concessions. In this manner prices have gained in firmness, and for forward delivery they are even higher, but to these buyers have so far declined to accede. The fact is that the position abroad is looked upon as being more favorable, while here the situation is essentially unaltered. For cable Charcoal Tin is quoted 10/6 @ 20/, and Coke, 15, with a firm market. We quote at the close large lots, ordinary brands, per box: Charcoal Bright, \$5.87½ @ \$6.25; ditto Ternes, \$5.30 @ \$5.40; Coke Tin, \$5 @ \$5.10; and ditto Ternes, \$5.

**Lead.**—Common Domestic has been a little firmer, with sales of about 500 tons at 4½¢, which is the closing quotation. Consumption is going on steadily, more so indeed than is usually the case at this time of the year, which activity thus makes amends for what was left undone in the spring. Stocks are just about sufficient to meet this belated demand, and no more. In St. Louis the market is a little weaker, Corroding being worth there \$4.30, and Common, \$4.15 @ \$4.25, according to brand. Refined at New York may be quoted \$4.50 @ \$4.75, according to brand. Sales at the lower price have been made of Newark Lead. Makers of the latter are making concessions in order to reintroduce, it would seem, their brand as Corroding Lead. The established Corroding brands are held as high as 4½¢. We perceive from the European papers that the Russian Government has of late been quite a purchaser again of Lead in Western Europe. These Russian army purchases are at times very important and not seldom amount to upward of 20,000 tons in a single year, as was the case for several years previous to the late Russo-Turkish struggle. It indeed bodes no good to the peace of Europe when the Russian army buys Lead, but it helps the latter for the moment, and caused an advance in London in May of £1 per ton. "London, June 18.—This market remains void of any buoyancy; nevertheless, prices keep fairly steady, although it seems rather questionable whether orders for pigs could not be placed at a shade under current quotations." Manufacturers are quoted as follows: Sheet Lead, 7¢; Lead Pipe, 6½¢; Tin-lined ditto, 15¢, and Block Tin Pipe, 40¢.

**Spelter and Zinc.**—Common Domestic Spelter has remained very dull, there being no demand and no sales to be put on record for the week. Reports from Europe are discouraging. It is doubtful whether concessions here would stimulate business in the metal, nor do we see any efforts made in that sense. We quote Common Domestic Spelter, 4½¢ @ 5¢, and Sheet Zinc, 6¼¢ @ 7¢. "London, June 18.—There is not much business doing in this metal, but prices continue to be steadily upheld for both foreign and English."

**Antimony.**—The demand remains fair, but prices have not varied from 14¢ @ 14½¢, according to brand and quantity.

**FOREIGN TRADE MOVEMENTS.**  
The following is a summary of the foreign trade movements for the week ended June 25:

For the week ended June 25:

	1879.	1880.	1881.
Total.....	\$4,479,948	\$9,218,831	\$7,537,194
Prev. reported.....	\$4,749,691	\$9,812,464	\$9,059,274

Since Jan. 1..... \$148,222,636 \$248,030,685 \$266,900,468

Included in the imports of general merchandise for the week were articles valued as follows:

	Quantity.	Value.
Arvils.....	24	\$3,200
Brass goods.....	204	2,704
Bronzes.....	14	2,404
Chains and anchors.....	53	3,098
Clocks.....	8	4,217
Cutlery.....	131	\$2,377
Flms.....	5	508
Guns.....	131	12,908
Hardware.....	4,530	100,460
Iron, pig, tons.....	23	1,805
Iron, sheet, tons.....	17,898	124,058
Railroad bars.....	16,197	121,264
Iron ore, tons.....	5,674	16,419
Iron, other, tons.....	688	30,419
Lead, pigs.....	9,000	7,178
Machinery.....	34	3,475
Metal goods.....	158	\$6,493
Needles.....	3	101
Nickel.....	80	7,734
Old metal.....	10	1,499
Platina.....	1	305
Saddlery.....	37	4,136
Steel.....	39,478	178,744
Spelter.....	121,264	4,027
Silverware.....	27	2,817
Tin, boxes.....	19,862	93,880
Tin, 320 lbs. slabs, 24,000 lbs.....	30,385	30,385
Wire.....	27	4,954

The following are the imports of leading articles, compared with previous dates:

	For the week.	25 weeks of 1881.	Same time 1880.
Cutlery, pkgs.....	131	3,422	702
Hardware, pkgs.....	25	552	702
Same time in 1879.....	17,898	164,301	416,608
Lead, R. B. bars.....	2,000	18,009	37,824
Steel, pkgs.....	34,778	454,173	410,473
Tin, boxes.....	19,862	736,421	831,295
Tin Slabs, lbs.....	24,000	7,406,841	17,426,449

For the week ended June 25:

	1879.	1880.	1881.
Total.....	\$4,856,094	\$9,163,891	\$7,537,194
Prev. reported.....	145,144,101	180,526,810	178,018,001

Since Jan. 1..... \$151,980,263 \$283,090,761 \$285,554,499

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended June 21:

	1879.	1880.	1881.
Total.....	\$4,856,094	\$9,163,891	\$7,537,194
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Eastward by water often being very difficult to procure. The rate to Boston is \$1.20 @ \$1.25; to Providence, 75¢ @ 80¢; New Haven and Bridgeport, 60¢; Norwich, 80¢.

## OLD METALS, PAPER STOCK, &amp;c.

The purchasing prices offered by dealers are as follows:

	1879.	1880.	1881.
Copper, heavy.....	\$0.14	\$0.15	
Copper Bottoms.....	12	13	
Yellow Metal.....	108½	109	
Brass, heavy.....	11½	12	
Brass, light.....	108½	109	
Composition, heavy.....	12½	13½	
Lead, heavy.....	103½	104	
Tea Lead.....	103½	104	
Zinc.....	103½	104	
Pewter, No. 1.....	108	109	
Pewter, No. 2.....	108	109	
Wrought Iron.....	22.00	23.00	
Light 10.....	10.50	11.00	
Store Plate.....	11.00	12.00	
Machinery do.....	15.00	16.00	
Grate Bars.....	5.00	6.00	

The prices current for Rags, &c., are as follows:

	1879.	1880.	1881.
Canvases, Linen.....	\$1.30	\$1.40	
White Cotton, New.....	1½	1½	
No. 2.....	2½	2½	
White, No. 1.....	4½	4½	
No. 2.....	2½	2½	
Seconds.....	1	1	
Soft Woollens.....	8½	9½	
Mixed Rags.....	8	8	
Gunny Bagging.....	20	20	
Butte.....	20	20	
Kentucky Bagging.....	3½	4	
Rock Stock.....	2½	2½	
Newspapers.....	1½	1½	
Waste Paper and Scrap.....	1½	1½	
Kentucky Bale Rope.....	10	10	

## IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending

June 29, 1881:

	1879.	1880.	1881.
Total.....	\$4,856,094	\$9,163,891	\$7,537,194
Prev. reported.....	145,144,101	180,526,810	178,018,001

Since Jan. 1..... \$151,980,263 \$283,090,761 \$285,554,499

EXPORTS, EXCLUSIVE OF SPECIE.

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Total.....	\$4,856,094	\$9,163,891	\$7,537,194
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causes, among which may be mentioned reported improvement in the English market, a somewhat reduced production, a stronger demand from consumers, and, to some extent, a clearing up of lots which were recently in the hands of weak parties. None of these features are strongly marked, but they are discernible, and likely to develop something definite after the midsummer holidays. Under present circumstances it might be premature to indulge in predictions, but it is perfectly safe to say that there is a better feeling, and holders give evidence of this by resisting concessions beyond what is usual in heavy transactions. Consumers show a similar confidence, by taking all that is offered when obtainable at the bottom figures quoted two or three weeks ago. The very low-priced lots are gone, however, and values are fairly uniform at \$20.50, \$22, and \$24 for the three grades. Some brands are held at \$25 and higher for choice No. 1 Foundry, and Gray Forge at \$22, with prospects that these rates will be maintained. Average qualities, however, may be quoted \$24, but are firmer than they were some time ago, although an offer of prompt cash might in certain cases induce concessions. Mill Irons are very steady; \$20 in Philadelphia being an inside price, while several leading makes command \$21 @ \$22. The furnaces are generally pretty well sold up, and, beyond the usual competition for business, there is no great pressure to realize. Consumption is steadily absorbing stock, and it is expected that the demand in the immediate future will be sufficient to confirm the improvement which appears to be so generally anticipated. Inquiries for large lots of Mill Irons are in the market, and anything of fair quality offered at \$19 at furnace, or less, is not likely to wait long for a buyer. Low grades at about \$17 @ \$17.50 are also in active demand, but are not in large supply. Foundry Irons are comparatively quiet, but prices are steady.

**Foreign Iron.**—Advices from abroad are of a favorable character, and lots for shipment are held at a decided advance. Bessemer float has been sold at \$22, but for shipment \$22.50 has been offered and refused. Holders claim that \$23.50 would be required to clear cost, with sterling quotations at 52/ @ 54/ f. o. b., at which prices are firm. Middlesboro' Iron is held materially higher for shipment, and spot lots have sympathized to some extent. No. 3 is held at \$18 @ \$18.50; No. 4 at \$17 @ \$17.50, with plenty of buyers at about \$1 reduction. In the meantime, buyers and sellers are apart in their views, and prices are nominal as above stated. Scotch Iron is very dull, and sells only in a retail way at \$21 @ \$23, according to brand.

**Blooms.**—There is a steady demand, but prices are unchanged, say: \$62.50 @ \$65 for Cold-blast Charcoal; \$55 for Run-out Anthracite, and \$45 @ \$47.50 for Scrap Blooms.

**Muck Bars.**—There is no change in any particular; the demand is satisfactory, and sales made are at \$38 @ \$38.50 at mill.

**Bar Iron.**—The demand is very active, and although the lots asked for are not very large, they are sufficient to crowd manufacturers to their fullest capacity. The outlook is considered to be very promising, although it is not unlikely that the demand during the past ten days has been increased in anticipation of the usual midsummer suspension at the mills. Consumption is so large, however, that even a few days' suspension may lead to an accumulation of orders which it will be difficult to overtake. This appears to be the feeling, and there is general satisfaction, both as regards orders on hand and in prospect. Mill prices are a shade firmer, 2.35¢ being an inside rate for large lots, and 2.4¢ for a considerable proportion of the output.

**Plate and Tank Irons.**—It is difficult to quote prices with any degree of exactness. The mills are so crowded with work that although they may name a price, it is by no means certain that they could accept an order. A good deal would depend on quantity, time for delivery and class of iron called for. We are informed by a leading manufacturer to-day that 2.0¢ @ 3.0¢ would be the very lowest for Tank Iron, while in another direction we are informed of a sale at 2.6¢. It is almost impossible to place orders, however, unless by applying at various places, and if the quantity is large, dividing it around. As an average of the market we quote as before: Tank Iron, 2.75¢; Refined Iron, 3.25¢; Shell, 3.50¢; Flange, 4.50¢, and Fire-box, 5.50¢ @ 5.75¢.

**Sheet Iron.**—The market is again very active and orders are pouring in at a rate almost without precedent. Prices of course are firmer, although not notably higher; buyers find that the concessions offered a month ago are not obtainable now. We quote the market steady at the following figures:

Common Sheet, No. 26 to 28.....4.5¢  
Common Sheet, No. 28 to 30.....4.5¢  
Common Sheet, No. 30 to 32.....4.5¢  
Best Refined 1/4 @ 1/2 advance on the above.  
Best Bloom Sheets, No. 26 to 28.....6.5¢  
Best Bloom Sheets, No. 28 to 30.....6.5¢  
Common Red Plates, 3-16 to 1-8.....3.5¢  
Blue Annealed, 3-16 to 1-8.....3.5¢  
Best Bloom Galvanized, discount.....40¢  
Second quality, discount.....50¢

**Wrought Iron Pipe.**—The demand is active, but prices continue weak. Boiler Tubes quoted at 45¢, and Steam and Gas Pipe, 65¢ from list price, with extra discounts to large buyers.

**Structural Iron.**—There is no change calling for special remark, the demand being of a steady and permanent character, without any deviation in prices. Manufacturers report a little more urgency in the demand for early deliveries, and business may be considered in better shape than it has been for some time past. Prices are unchanged at 2.6¢ for Angles; 3¢ for Tees; 3.3¢ for Beams, and 3.4¢ for Channels.

**Steel Rails.**—There is comparatively but little doing in Steel Rails, buyers having made arrangements for summer deliveries long ago, and there is not much doing for the distant future. There is no difficulty in disposing of Rails at full prices, however; the great difficulty is to find any for sale. Summer deliveries are wanted at \$60 @ \$62.50; fall and winter available at \$56 @

\$58, while spring deliveries have not been taken to any extent, buyers' ideas as to values being somewhat below what manufacturers ask. The extreme rates at which business has been done, and at which manufacturers still quote, are \$55 @ \$60 at mill, according to date for delivery. English Rails are offered at \$60 @ \$62, delivered according to time and port. Sales of light Rails are reported at \$63, delivered at gulf port.

**Steel Blooms.**—Several transactions are under negotiation, but the only lot that has been definitely closed, so far as we can learn, is 5000 tons for Chicago, on private terms. We hear that they are quoted at \$6 @ \$6.50, c. i. f., which would make the cost, duty paid, about \$43 @ \$44. At the inside figure it is likely that further business could be done.

**Iron Rails.**—There is very little to report in the way of new business. There are a few inquiries for small lots, and sales are made at \$46.50 @ \$47 for early deliveries. Later deliveries could be had at lower figures, but there is very little demand for anything beyond July or August. The mills are actively employed on April and May contracts, and are likely to have all they can attend to during the balance of the year. English Rails are offered at \$2 to \$3 below the price of American, say \$43 @ \$44 for heavy sections.

**Railway Supplies.**—Spikes are in good demand, but at somewhat irregular prices. Early deliveries are quoted 2.65¢ @ 2.75¢ for rolled points. Fish Plates steady at 2.3¢ @ 2.5¢.

**Old Rails.**—The market is dull, and, although prices are nominally unchanged, buyers are less disposed to operate. Stocks are light, and, for the few that are here, about \$25.50, in store, is asked. Lots for shipment would cost over \$26, but there is very little demand at the moment.

**Crop Ends.**—A small lot is on the market at \$26, but buyers are not offering within \$2 or \$3 of that price.

**Old Car Wheels.**—Buyers are prepared to pay \$28 @ \$30, but at the moment there are none on the market.

**Scrap Iron.**—The market is very dull and large lots difficult to move. Cast sold at \$20.50 to-day for a choice lot. Wrought is dull at \$27 @ \$29.

**Coke.**—The strike has ended, and consumers have no difficulty in supplying their wants at \$1.60 @ \$1.65 at ovens. There is a fair demand and prices not likely to vary a great deal from the figures above quoted.

**Nail.**—Are dull and prices irregular, although \$2.85 @ \$2.90 may be considered an inside price for wholesale lots.

## PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue,  
Pittsburgh, Pa., June 26, 1881.

The improvement in our report of last week has, as therein predicted, affected Pig Iron, which is not only more active, but considerably firmer. With very few exceptions, the mills are all busy, are better supplied with orders, probably, than at any time this year, and the indications are that this will continue to be the case for some time to come. That labor troubles at Cincinnati and other points West have largely increased the Iron business of Pittsburgh, is true; but the insinuations thrown out at Cincinnati that the ironmasters of Pittsburgh sympathized with the strike at Cincinnati, or had anything to do with it, are without foundation. Not only is the Iron business better, but there has been a recent improvement in nearly all branches of business. Window Glass manufacturers report a steadily increasing demand, with prices from 15 to 20% higher than they were as compared with the lowest point. Our Coal and Coke men have had a most prosperous season. Both of these Pittsburgh interests have grown to colossal proportions. And even the Oil Refining business, which it was thought was dead and buried, so far as Pittsburgh was concerned, has come to life again, nearly all our refineries having been started up. While the spring trade has been slow and, as a rule, disappointing, for which there was good cause, there is every indication that it will be fully made up before the close of the year.

**Pig Iron.**—There has been a marked improvement in the demand since our last report, several round-lot sales having been made, and an active business is looked for next month after stock-taking has been completed. While producers generally do not expect any immediate advance, they are very hopeful of a more steady market, and that consumers will by-and-by be willing to pay present asking prices. Unknown and off-lots may be picked up now and again, as is often the case, at a low price, but desirable and well-known brands are held with considerable tenacity, and for these furnacemen expect to obtain better rates in the near future. The fact that the mills are not only busy, but are obtaining better prices for all kinds of finished Iron, is very comforting to furnacemen who take it that mill owners will have more heart when they enter the market to buy the raw article. True there is a good deal of imported Pig being offered not only at the seaboard, but throughout the West, at what appears to be very low prices, but by the time the best qualities are delivered at points in the interior, with freights from \$3 to \$5 per ton, to say nothing about commissions and other incidental expenses, it runs the cost up to almost that demanded for good native Irons, while as regards the poorer qualities of foreign, they are not wanted here at any price. We continue to quote good brands of Neutral Forge at \$22 @ \$22.50, 4 mos.; \$21 @ \$21.50 for ditto inclined to Cold Short. Sales, 1000 tons Forge (from native ore) at \$22.50, 4 mos.; 500 and 200 ditto (from Lake ore) at \$22, 4 mos., and 400 ditto at \$21.50. There are now but few if any sellers of strong neutral inclined to Red Short mill, under \$22, cash, or \$22.50, 4 mos. Nothing doing in Bessemer. Foundry Irons selling at \$22.50 @ \$23 for No. 2, and \$23.50 @ \$24.50 for No. 1.

**Manufactured Iron.**—The situation continues encouraging. Mills are all busy, many of them sold from 30 to 60 days ahead

and the improvement in prices is fully maintained. Bars are still quoted at 2.25¢ rates, 60 days, 2¢ off for cash, although a well-assorted and desirable order might be placed at 2.20¢ or even 2.15¢. Sheet is firm, mills all very busy, and No. 24 is now quoted at 3.75¢. Tank Iron has gone still higher, and we quote 2.80¢ as bottom, an advance of two and one-half cents as compared with the lowest point. The Tank mills are very busy, and it is difficult to place an order even at the advance. Hoop still quoted at 2.90¢ @ 3¢; best brands of Boiler Plate, 5 1/2¢.

**Nails.**—There is only a moderate business, although the local trade is steadily increasing. Prices remain about as last quoted, \$2.75, 60 days, 2¢ off for cash.

**Wrought Iron Pipe.**—There is an increasing demand, but no change in card or discounts. We continue to quote the latter at 65¢ @ 67 1/2¢; Boiler Tubes unchanged at 45¢ @ 47 1/2¢. Oil-well Casing, 70¢ per foot, net; ditto Tubing, 20¢, net.

**Railway Supplies.**—There have been no sales of Steel Rails reported here for some time, in the absence of which we omit quotations. Railway Spikes remain unchanged at 2.75¢, 30 days; Splice Bars, 2.40¢ @ 2.50¢; Track Bolts, 3 1/4¢ @ 3 3/4¢, with Square and Hexagon Nuts.

**Steel.**—While there is no particular activity, the mills generally are fairly employed and the prospect is favorable for an active business this fall. Prices remain as last quoted: Best brands of Refined Cast Steel, 11¢; ditto Crucible Machinery, 7¢; Bessemer and Open-hearth, 5¢ @ 5 1/2¢; ditto Spring, 4¢ @ 4 1/2¢; ditto Flaw, 4 1/2¢ @ 4 3/4¢.

**Scrap.**—Dealers nearly all report business as being dull, as it usually is just before stock-taking, and there is not likely to be any particular activity until the latter part of July, if then. Prices nominally unchanged, but general tone of market weak. No. 1 Wrought, \$28 @ \$30 per net ton—outside figure for selected Railway; Steel Crop Ends, \$29 @ \$30 per gross ton; Old Car Wheels, nominal at \$29 @ \$30.

**Coke.**—Advices from the Connellsville region report a good many of the striking employees as having resumed work at the old pay, and it may be taken for granted that the strike is virtually over. Owing to the lull in Pig Iron the demand for Coke is less active, and operators generally were in good condition to resist the demands of the strikers: some of the former, it is intimated, would like to have had a strike in order to reduce production for a time. Prices remain about as last quoted, \$1.60 @ \$1.65 per ton, delivered free on cars at ovens for near-by delivery.

**Window Glass.**—The demand continues to increase, and with it prices are hardening; present rates show an advance of at least 15% as compared with the lower point. Discounts 60 & 20% on single, and 70% on double strength for carload lots.

## CHICAGO.

Office of The Iron Age,  
36 and 38 Clark Street, cor. Lake Street,  
Chicago, June 27, 1881.

**Pig Iron.**—The market for Charcoal Pig continues very satisfactory and the demand good. Thomas Iron continues to be in fair demand, while the supply of Scotch (imported) is small. The demand has been such as to warrant holders to advance the price slightly—say, 50¢ per ton, but buyers would have no great difficulty in placing their orders at the old figures, viz.: \$26 @ \$28. The demand for American Scotch is fair at \$25 @ \$28; Silver Soft, \$24 @ \$26; Anthracite, Nos. 1 and 2, \$25 @ \$27; Coke continues firm at \$25 @ \$27. For Lake Irons we have no change to note since our last writing, the demand still continues very satisfactory and the outlook good. We quote: Nos. 1 and 2, \$30 @ \$32; No. 3, \$33; Nos. 4, 5 and 6, \$31. The statement that has been in circulation in reference to overproduction is not applicable to the Western furnaces, as the production of all the furnaces in the Northwest has been but very little more than the actual demand for consumption.

**Manufactured Iron.**—The demand for Manufactured Iron of all classes is very good, particularly Bar, for which in all probability there will be an advance asked within a few days; there are very light stocks of standard sizes of Round Iron in the market. We quote Bar at 2.30¢ @ 2.40¢; Sheet, 10 to 14 gauge, 3.30¢ @ 3.40¢; Tank at 3.30¢ @ 3.40¢, and Hoop, 3.20¢ @ 3.30¢.

**Nails.**—To judge from appearances and the tone of the market, which is strong, dealers are adhering pretty firmly to prices adopted at the meeting held last week, namely, \$3 for rod, to 60d. in small lots, and \$2.90 for carload lots, with the usual discount.

**Steel.**—Continues in the same condition as last mentioned—active, and prices firm. We quote: Tool, 11 1/2¢; Machinery (open hearth), 6¢; Crucible Machinery, 7¢; Hammer (Cast), 2 inches and under, 8¢; over 2 inches, 10¢; Cast Spring, 6 1/2¢; Open-hearth Spring, Tire and Sleigh Shoe, 5¢.

**Scrap Iron.**—The Scrap Iron market is weak, with prices unchanged. We quote: No. 1 Wrought, \$25; Forge Scrap, \$29 @ \$30; Heavy Cast, \$20 @ \$21, and Store Plate, \$15.

## CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts.,  
CHATTANOOGA, June 27, 1881.

The feeling among manufacturers in the Chattanooga district is more cheerful than it has been for several weeks. The general demand is better for finished materials. There is more disposition to lay in stocks by consumers and dealers. A good many of them had exhausted stocks carried for some time, while they hoped for considerably lower rates. These are buying pretty liberally, apparently believing that Pig and Bar have gone to the lowest point. There is now much less prospect of a strike than existed some time ago. Holders are decidedly more firm than they were, as a while slight concessions are here and there made, the general market is steady. The weather has been hot with plenty of rain.

**Pig Iron.**—There is nothing new to report except a firmer tone of the market and less call for shading on the part of buyers. We quote: No. 1 Foundry, \$22 @ \$24; No. 2 Foundry, \$20 @ \$21; Gray Forge, \$18 @ \$19; White and Mottled, \$16 @ \$18; Car-wheel Metal, \$38 @ 40.

**Ores.**—We quote: 50% Brown Hematite, per ton, \$2 @ \$2.75; Red Fossil, \$2 @ \$2.25.

**Miscellaneous Articles.**—Old Rails are a trifle stronger, the demand by Northern mills being rather better than for some time. We quote them at \$26 @ \$28; Wrought Scrap, \$20 @ \$25; Cast Scrap, \$10 @ \$15; Old Wheels, \$28 @ \$30.

**Nails.**—Are fairly steady at \$3.10, that rate being only for the smallest lots. Large lots are placed at \$2.95 @ \$3.

**Manufactured Iron.**—The strike at Cincinnati is imparting a temporarily stranger tone to the market here for Bar and other Finished material. Mills and dealers now are quite firm at \$2.25 rates. We quote: Spikes, \$3.15; Track Bolts, \$4; Trestle Bolts, \$4.50; Fish Plate, \$2.50.

**Coal.**—We quote run of mine, \$2 per net ton, with a full supply offering.

**Coke.**—We quote: Furnace Coke, \$3 per ton at furnace; Foundry, 10¢ @ 12¢ per bushel.

**Steel and Iron Rails.**—Steel Bars, \$62 at mill; Iron, \$50 @ \$52; Small, \$57 @ \$60.

## BOSTON.

**JUNE 25.**—The Iron market presents the same dull and drooping appearance as last reported, and newspapers all over the country have been bearing heavily upon it during the past week. It seems to us, however, that the two occurrences which have just now induced so many of our contemporaries to commence lamenting the unsatisfactory condition of the Iron trade, are the very ones from which an improvement is to be looked for, viz., the fact that so many furnaces are going out of blast in various sections of the country, and that large stocks of foreign Iron which have been threateningly suspended over the trade for more than a year past, are now being thrown upon the market and cleaned out of the way. A considerable percentage of the furnaces in the Schuylkill and Lehigh districts have gone out of blast during the past fortnight, and it is probable that 12 or 15 per cent. of the furnace capacity of Eastern Pennsylvania has become inactive on account of the unsatisfactory condition of the Iron trade. When, therefore, the present process of absorption of the old speculative stock is completed, will not the present decrease in production inevitably lead to a firmer market? In fact, it is intimated that some furnacemen are already less inclined to sell future deliveries except at full quotations, and some consumers are showing a disposition to replenish their stocks. We quote American Pig Iron at \$23.50 @ \$24 for No. 1 X; \$21 @ \$22 for No. 2 X, and \$19 @ \$20 for Gray Forge. These prices are f. o. b. at the port of shipment. Small spot lots will command \$2 per ton higher. Foreign Pig is not quotably lower, though one or two parcels of No. 1 Middletown are reported to have been sacrificed at about \$18 1/2 per ton in connection with the failure of E. P. Cutler & Co. Nearly all brands, however, are held at the same prices as last noted, and the high freights ruling from Glasgow are increasing the cost of importation. We quote Coltness and Langloan at \$23 @ \$23.50; Gleggarnock and Gartsherrie at \$22 @ \$22.50; Carnbroe at \$21.50; Eglington at \$20.50 @ \$21, and Middletown at \$19 for No. 1 ("Clarence"), and \$17.50 for No. 3. Old Rails are in moderate demand at \$28 @ \$28.50 for American, and \$26 @ \$27 for Foreign. Manufactured Iron is in moderate demand at unchanged prices. Refined Bars are selling at \$2.25. Swedish or Norway is unchanged at \$3.75 for Bars and \$4.75 for Shapes. Plate Iron is steady at \$2.75 for Common and Tank; \$3 for C. No. 1; \$3.40 for C. H. No. 1 Shell, and \$4.40 for C. H. No. 1 Flange. Nails are meeting with a moderate inquiry, and dealers are disposed to yield slight concessions on round lots. The advertised net price is \$3.15, but purchases of 200-keg parcels are possible at \$3.05. The Boston store prices of Steel are as follows: Best English Cast, 14¢ @ 14 1/2¢; American ditto, 12¢ @ 12 1/2¢; Bessemer Machinery, 5¢ @ 6¢; Crucible ditto, 7¢ @ 7 1/2¢; Wedge and German, 7¢; English Spring and Sinking, 7¢ @ 7 1/2¢; American Spring and Sinking, 5¢ @ 5 1/2¢; Tire, 3 1/2¢ @ 3 3/4¢; Sleigh Shoe, 3¢ @ 3 1/4¢. Copper has dropped to 16 1/4¢ @ 17¢ since our last, and the mining companies have now become sellers at the latter figure. Even at these prices the market lacks tone, and buyers are holding off in expectation of a still further reduction, 10¢ being freely talked of as the prospective price within the next week or ten days. Manufacturers of Copper have not been changed as yet, but a reduction is looked for. We quote, nominally, New Sheathing Copper at 26¢, and Bolts, 28¢; Rods, 31¢; American Yellow Metal Bolts, 20¢, and English Yellow Metal Sheathing, 24¢, in bond. Lead is quiet and steady at \$4.55 by the carload, and 4 1/2¢ @ 4 3/4¢ for smaller parcels. The prices of manufactured are unchanged, as follows: Bar, 6 1/2¢; Pipe, 6 1/2¢; Sheet, 7¢; Tin-lined Pipe, 15¢; Tin Pipe, 40¢, all less 10% to the trade. No. 1 Solder, 11 1/2¢. Spelter is quiet and steady, and we quote \$5.05 by the carload for Western and 4 1/2¢ for remelted. Small lots bring 1/2¢ above those figures. Sheet Zinc is slow of sale at 6 1/2¢ @ 7¢. Tin has continued firm and in moderate demand at 21¢ for Straits and English. Tin Plates are in moderate demand at steady prices. We quote: Charcoal Bright, \$6 @ \$6.25; ditto Terns, \$5.37 1/2 @ \$5.50; Coke Tin, \$5 @ \$5.25; ditto Terns, \$4.87 1/2 @ \$5.12 1/2.—Commercial Bulletin.

## CINCINNATI.

**JUNE 27.**—Pig Iron.—The market remains in much the same condition of last week as to supply, demand and prices. The strike among the rolling-mill hands continues, without any prospect of an agreement. Meantime, as was anticipated by our rolling-mill owners, when the greatest activity in the trade should be enjoyed, the mills are silent and the orders have all floated away

to other points. No. 1 Hanging Rock Charcoal Foundry, \$27 @ \$27.50; No. 1 Coke do. \$23; Good Coke do., \$22; No. 2 Coke do. \$21 @ \$21.50; No. 1 Bituminous, \$22.50; No. 2 ditto, \$20.50 @ \$21; Silver Gray Softeners, \$20 @ \$21; Cold-blast Charcoal Car Wheel, \$35 @ \$38; Southern Warm-blast, \$33 @ \$35; Bar Iron, \$2.15 @ \$2.25, card rate.

## LOUISVILLE.

Messrs. Geo. H. Hull & Co., Commission Merchants, report to us as follows, under date of June 24: The market is quiet and dull, as is usual at this season of the year. We quote for cash as below:

### FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal.....	\$28.00 @ 29.00
No. 2.....	26.00 @ 27.00
No. 1 Southern, Charcoal.....	23.50 @ 24.00
No. 2.....	22.50 @ 23.00
No. 1 Hanging Rock, Stonecoal and Coke.....	23.50 @ 24.00
No. 2 Hanging Rock, Stonecoal and Coke.....	22.00 @ 23.00
No. 1 Southern, Stonecoal and Coke.....	23.50 @ 24.00
No. 2.....	22.50 @ 23.00
"American Scotch".....	22.50 @ 23.00
Silver Gray.....	20.00 @ 21.00
Scotch.....	24.00 @ 25.00

### MILL IRONS.

No. 1 Charcoal, Cold-short and Neutral.....	21.00 @ 22.00
No. 1 Stonecoal and Coke, Cold-short and Neutral.....	20.50 @ 21.00
No. 2 Stonecoal and Coke, Cold-short and Neutral.....	19.50 @ 20.00
No. 1 Missouri and Indiana Red-short, White and Mottled, Cold-short and Neutral.....	18.00 @ 19.00

**CAR WHEEL AND MALLEABLE IRONS.**

Hanging Rock, Cold-blast.....	35.00 @ 40.00
Alabama and Georgia, Cold-blast.....	35.00 @ 40.00
Kentucky, Cold-blast.....	35.00 @ 40.00
Hanging Rock, W. B.....	30.00 @ 35.00

## ST. LOUIS.

Messrs. HOFFER, PLUMB & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, write as follows, under date of June 25: There is considerable inquiry for Pig Iron and some trade. Ordinary brands are offered somewhat lower, but the quantity of business done and the fact that we are between seasons do not warrant any change in quotations, which for the most part may be considered nominal. We therefore quote:

### HOT BLAST CHARCOAL.

Missouri.....	\$27.00 @ 28.00
Southern.....	25.00 @ 26.00
Ohio.....	28.00 @ 29.00

### COKE AND COAL.

Missouri.....	26.00 @ 27.00
Southern.....	24.00 @ 25.00
Ohio.....	23.50 @ 24.00

### MILL IRONS.

Cold-short.....	21.00 @ 23.00
Red-short.....	25.00 @ 26.00

### CAR WHEEL AND MALLEABLE IRONS.

Missouri.....	28.00 @ 30.00
Southern.....	35.00 @ 36.00
Ohio.....	35.00 @ 40.00

## BALTIMORE.

W. N. WYETH, Iron and Steel Merchants, 46 and 48 South Charles street, reports us the following, under date of June 27: Trade rules quiet and unchanged, with prices ruling firm as per annexed values:

Ref. Bar Iron, 1 to 6 x 3/4 to 1..... 2 1/2¢ @ 2 3/4¢  
" " 1 to 6 x 1 1/4 to 1 1/2..... 2 1/2¢ @ 2 3/4¢  
" " 1 to 6 x 2, Round..... 2 1/2¢ @ 2 3/4¢  
" " 1 to 6 x 2, Square..... 2 1/2¢ @ 2 3/4¢  
" " 1 to 6 x 2, Round..... 2 1/2¢ @ 2 3/4¢  
" " 1 to 6 x 2, Square..... 2 1/2¢ @ 2 3/4¢  
Hoop Iron, 1 1/2 wide and upward..... 3 1/2¢ @ 3 3/4¢  
Band Iron, from 1 1/2 to 4 in. wide..... 3 1/2¢ @ 3 3/4¢  
Horse-shoe Iron..... 3 1/2¢ @ 3 3/4¢  
Norway Nail Rods..... 3 1/2¢ @ 3 3/4¢  
Black Diamond Cast Steel..... 13 1/2¢ @ 14 1/2¢  
Machinery Steel..... 9¢ @ 9 1/2¢  
Cast Spring Steel..... 8¢ @ 8 1/2¢  
Common Horse Nails..... 1¢ @ 1 1/4¢  
Perkins' Horse shoes 1/2 keg of 100 lbs..... 4.17¢  
" Mule shoes..... 5.37¢

R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows, under date of June 27: The Iron market is without any material change. The demand is fair for the season, and prices range about as follows:

Baltimore Charcoal Wheel Iron.....	\$35.00 @ 36.00
Virginia C. B. Wheel Iron.....	35.00 @ 36.00
Anthracite No. 1.....	24.00 @ 25.00
No. 2.....	23.00 @ 24.00
No. 3.....	22.00 @ 23.00
Mottled and White.....	18.00 @ 19.00
Charcoal C. B. Blooms.....	60.00 @ 65.00
Refined Blooms.....	50.00 @ 55.00

## RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of June 27: Some grades of Pig Iron are scarce and manifest decided firmness. On the whole, the tone of the market has improved, with quotations unchanged.

Scotch Pig Iron.....	\$23.00 @ 25.00
No. 1 Anthracite ditto.....	22.00 @ 23.00
No. 2.....	20.00 @ 21.00
No. 3.....	19.00 @ 20.00
No. 1 Virginia Coke Pig Iron.....	22.50 @ 23.50







## DRILL BRACE.



This is a 10-inch sweep Brace, with a gear-wheel speeded about three to one, to be used for drilling and also for boring in places where there is not room to revolve the Brace Sweep. By an ingenious device the large gear wheel can be put on at three different angles with the Brace Sweep, adapting it for use in narrow or cramped places. When not needed the gear wheel can be removed in one second, leaving a plain Brace. This Brace is made of steel, and is heavily nickel-plated, with rosewood handle and lignumvitæ head. The jaws are of forged steel and will center and hold firmly Round Twist Drills from 1/4 to 7-16 of an inch in diameter. Also, Square Shank Bits and Drills of all sizes. Also, Square and Flat Screw Driver Bits. In fact, it will hold perfectly tool shanks of any size or shape. There is no other chuck in existence which will do this. It is our purpose to furnish everything in the line of Bit Braces and Breast and Hand Drills of a style and quality superior to anything else in the market.

Price of Drill Braces per dozen, \$36.

Same discount as Breast Drills.

## MILLERS FALLS COMPANY,

74 Chambers Street, New York.

## A. E. DEITZ, SCREEN DOOR LATCH,

For Screen Doors, Drawers, Cupboards.



No. 411, Reverse Bevel.....per doz., \$10.20

No. 412, Plain " " " " " 10.20

Durrie & McCarty, Agents, 97 Chambers & 81 Reade Streets, NEW YORK.

## HEATON & DENCKLA HARDWARE CO., Hardware Commission Merchants,

507 Commerce Street, Philadelphia.

E. & G. BROOKER'S "Anchor Brand" Nails, Brads, Spikes, &c.  
MALLORY, WHEELER & CO.'S Door and Pad Locks.  
UNION MANUFACTURING CO.'S Butts.  
AMERICAN SCREW CO.'S Screws.  
D. R. BARTON TOOL CO.'S Edge Tools, &c.  
FRANCE'S Shutter Holders.  
Anti-Window Rattlers, Brass and Nickel-Plated.  
WESTERN FILE CO.'S Cast-Steel Files.  
AMERICAN SHEAR CO.'S Shears and Scissors.  
HP NAIL COMPANY'S Wire, Steel, Iron and Brass Nails and Barbed Nails.  
TEELE & SONS' Wrought Handle Sad Irons.

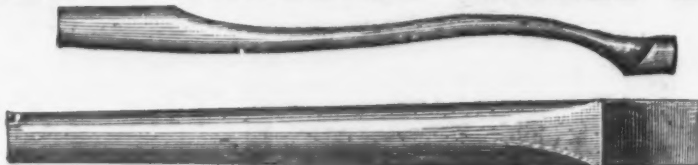
EXCELSIOR MILLS. Genuine Turkish Emery.  
BROWN & BRO.'S Silver Plated Spoons and Forks.  
GAYLORD MANUFACTURING CO.'S Tilt, Chest and Cupboard Locks.  
AMES' Genuine Chester Emery.  
COLWELL & COLLINS, NORWAY BOLT CO., Norway Carriage and Tire Bolts.  
PLYMOUTH MILL CO.'S Black and Tinned Iron Rivets.  
AMERICAN MACHINE CO.'S Fluters, &c.  
STUART PETERSON & CO.'S Tinned and Enamelled Ware, &c.

Also a large line of Heavy and Shell Hardware.

## HUNDLEY & HANKS,

PROPRIETORS OF

## NORTH CAROLINA HANDLE CO.,



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## THE CHAMPION



## Barbed Wire

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Patented July 24, 1880.



The engraving shows that the "Ideal" is the most perfect, simple and complete pot ever produced, and as such is the best selling pot in the market. It sells on its own merits. By its use the coffee is always regular, of the same quality, strength, and perfectly clear. A child can make better coffee in this pot than can an adult by the old method of boiling. It is without doubt the best pot in the world to day, and you can sell them. They are used and recommended by Mrs. President Hayes, Mrs. Bishop Simpson, Hon. John Jay, Gen. B. Flint, California, and by everybody who has used one.  
Prices: Polished Tin, per doz., 3 pt., \$7.50; 5 pt., \$10.00; 7 pt., \$13.20. 9 pt., \$15.00. Nickel Silver, 3 pt., \$11.50; 5 pt., \$15.00; 7 pt., \$18.75. The nickel silver pots are nickel-plated outside and silver-plated inside. They are very handsome. Discount 25 per cent. Send for circular or 50 cents for a 5-pint sample pot.

IDEAL COFFEE POT CO., 622 Filbert St., Philadelphia, Pa.

**PRIZE MEDALLISTS:**  
Exhibitions of 1862, 1867, 1869, 1872, 1873, and only award and medal for Noiseless Steel Shutters at Philadelphia, 1876, and Paris, 1878.

## CLARK, BUNNETT & CO., LIMITED,

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Original Inventors and Sole Patentees of  
Noiseless Self-Coiling Revolving  
STEEL SHUTTERS  
FIRE AND BURGLAR PROOF. ALSO IMPROVED  
ROLLING WOOD SHUTTERS  
Of various kinds. And Patent  
METALLIC VENETIAN BLINDS.

Endorsed by the  
Leading Architects of the World.  
Send for Catalogue.

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162 & 164 West 27th St., N. Y.

BOLSTER SPRINGS FOR FARM WAGONS.  
Made of Best Oil Tempered Steel.

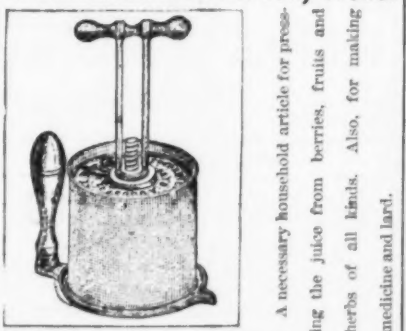
The ONLY RELIABLE Bolster Spring in Use.



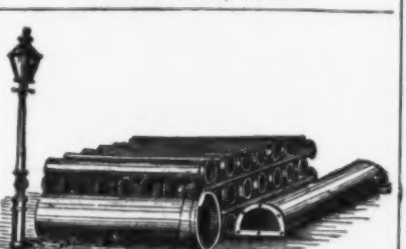
**SIMPLE AND SATISFACTORY.**  
They are largely from wear and tear in every part of the Wagon. They remove all necessity for a spring seat. They convert a common Lumber Wagon into a Spring Wagon, making it equally comfortable for from one to twenty persons. They are admirably adapted to the wants of Fruit and Vegetable Growers. They are suited to all makes and sizes of Farm Wagons, and can be attached by any one. They make the cheapest and easiest riding Spring Wagon in the market. These Springs have been in practical use for over four years, and are a pronounced success. No Farmer or Farmer can afford to be without them. We want Agents everywhere. Send for description and prices, and mention this paper.

SEMPLE & BIRGE MFG. CO., ST. LOUIS, MO.

## The American Fruit & Jelly Press.



Address,  
American Fruit and Jelly Press Co.,  
CINCINNATI, OHIO.



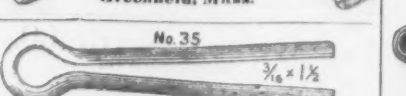
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**Cast Iron Pipe**  
FOR WATER AND GAS,  
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400 CHESTNUT STREET.

**ACCOUNT BOOKS**  
ALL SIZES BINDINGS & QUALITIES IN STOCK  
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The only Ox Shoe made with patent concavity to fit hoof. Also, Fine Shoes with two calks complete, at same price.  
Worth double any Nailable Iron Shoe.  
Greenfield Tool Co.,  
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No. 35  
BROWNING, SISUM & CO., 85 Chambers St.  
Manufacture  
Belt Hooks, Cotter's, Spring Keys, D Rings, Staples, and everything pertaining to wire bending. Factory, BROOKLYN.

## L. COES' Genuine and Mechanics PATENT

## Screw Wrenches

MANUFACTURED BY  
L. COES & CO.,  
Worcester, Mass.

ESTABLISHED IN 1839.



Our Genuine Wrenches are made with straight bars, full width and enlarged jaw, having ribs cast inside, which strengthen the jaw and give a full bearing on front of bar. These improvements, in combination with our new ferrule, made with double bearings, an iron tube, fitted to the shank and resting against the lower bearings, rigidly held in position by the handle and nut, effectually preventing back thrust of ferrule (see sectional view), verify our claim that we manufacture the heaviest and strongest Wrench in the market. None genuine unless stamped.

L. COES & CO.,  
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Warehouse,  
97 Chambers and 81 Reade Sts.,  
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DURRIE & McCARTY,  
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## The 1881 Pennsylvania Lawn Mower.

OUTSTRIPS ALL COMPETITORS. PREMIUMS TAKEN OVER ALL OTHER MOWERS.  
EVERY MACHINE WARRANTED TO WORK AS REPRESENTED.



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PENNSYLVANIA LAWN MOWER,  
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Can Cut Grass Immediately After Rain.

Make 10, 12, 14, 15, 16, 17, 18-inch Hand Mowers, and 30-inch Horse Lawn Mower. Both Hand and Horse Mower will cut higher grass than any other Mower manufactured.

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Is designed to be attached to any Barrel or Cask, thereby converting the same into a temporary Tank, fitted with an effective Pump, and while protecting contents from dirt and waste, the owner has entire control of same, by simply locking the cover. It entirely does away with the labor and waste attendant upon emptying Barrels into any of the numerous Metal Tanks, while securing all the conveniences of the same, at a GREATLY REDUCED COST. The Apparatus can be adjusted in a few moments to a Barrel of any size, and as quickly shifted to another when contents are exhausted, the process of connecting being very simple. It is as compact in form as is consistent with perfect efficiency, and we feel confident that a trial will demonstrate its practical value.

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As there are several Springs similar in appearance, but without our improvements, upon the market, see that you buy only the "Union" Adjustable and Reversible.

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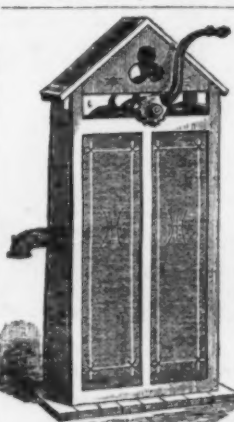


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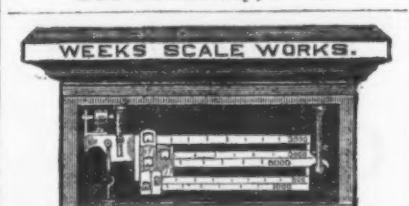
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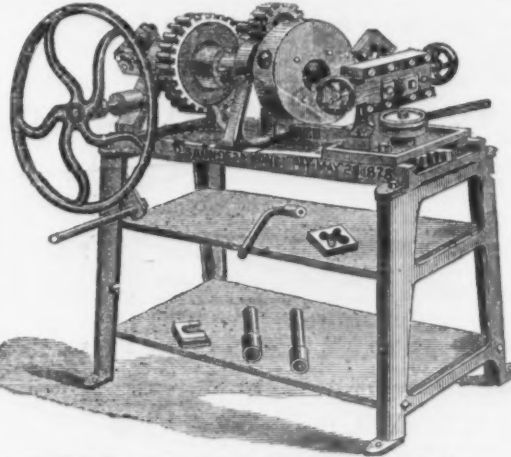
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Bargains in Hardware and Cutlery.

Low estimates made on all kinds of small castings in the rough, japanned or varnished.



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Requires no Water.

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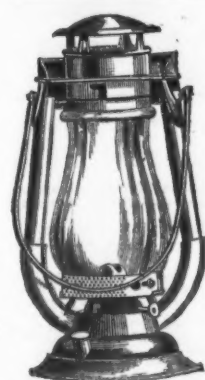
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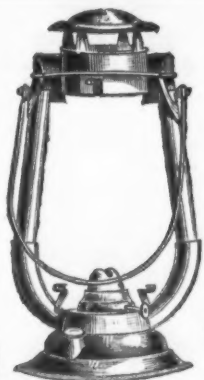




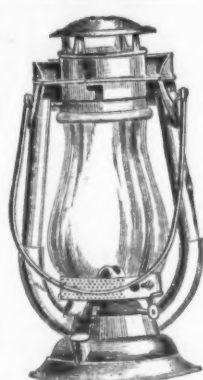


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Gives more light and will hold the flame more perfectly than any other lantern made.



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Manufacturers of  
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Medal of Superiority awarded at American Institute Fair of 1880.

This Shafting is superior to any in the market, and commends itself to the trade for the following reasons, viz:

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**CAST BUTTS, BARN DOOR HANGERS, & RAIL, CRINDSTONE FIXTURES, SCREW & SIDE PULLEYS, NOISELESS PULLEYS, HAY FORK PULLEYS, SHELF BRACKETS, PAD LOCKS, PHILADELPHIA SLIDING DOOR HANGERS AND RAIL.**

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INCLUDING IN GREAT VARIETY THE WELL-KNOWN

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(Every Iron of our make warranted a perfect cutter.) ALSO,

Galeatized Hammock or Boat Snaps and Gaff Topsail Self-mousing Ship Hooks, Harness Snaps, Baby Snaps, Washer Cutters, Pocket Wrenches, Amateur Lathes, &c.

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This cut represents the interior of the Tuyere, showing the rotating air tubes through which four different sized currents of air may be passed, thereby making any sized fire from two to 18 inches in diameter; for instance, if a large fire is being used and the next job should be a nail rod, we do not move or burn the large bed of coal,



but turn the small tube up and so concentrate the heat to the point desired.

The constant flow of water keeps the Tuyere cool and prevents cinders or clinkers from forming in the fire. To prevent the water from freezing in the pipes, the barrel is supplied with a faucet that empties the pipes but not the barrel. All the dirt from the fire sifts through the perforated fire cap into the dirt box, from which it is blown by the blast when the ball valve is raised for that purpose. I also furnish Tuyere Irons without water attachment. See first issue of the month.

After having used your "Variable Blast Tuyere Iron" three months, I pronounce it perfect in every respect, and it actually saves from 25 to 50 per cent. of the coal. **CHAS. VAN HORN, Earlville, Ill.**

Send for price list and discount.  
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Manufacturers of  
**IRON TOYS,**  
Fine Gray Iron Castings,  
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We are ready to supply the trade with the Cheapest and Best Mower now in the Market.

Every machine unconditionally warranted. It has an adjustable vibrating handle, perfectly adapted for Terraces, Slopes and every variety of Lawn. EVERYBODY CAN AFFORD TO BUY THE "DAISY." Manufactured in four sizes, for hand use. Liberal discount to the trade.

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## NEW MAKE OF MINE LAMP.



**LEONARD BROS., Scranton, Pa.**

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For steep or flat roofs. Applied by ordinary workmen at one-third the cost of tin. Circulars and samples free.

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## FINISHED CASE-HARDENED HEXAGON NUTS

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## SEMI-FINISHED NUTS,

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Prices on Application.

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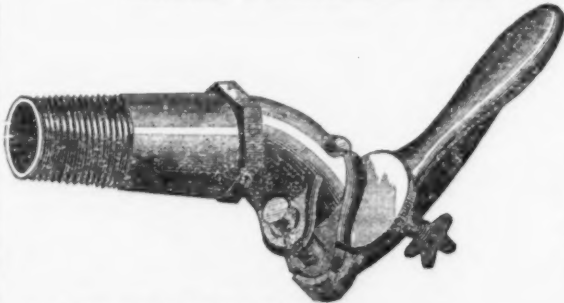
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Office of **NELSON LYON,**  
SOLE MANUFACTURER OF  
**Lyon's Patent Metallic Heel Stiffeners,**  
Also, Manufacturer of  
**BRUSHES**  
Of Every Description,  
Nos. 17 & 19 Green St.,  
Albany, N. Y., Dec. 8, 1880.

## To All Whom it May Concern:

To-day a decree in my suit against G. T. Fisher & Co., of Detroit, for an infringement of my patent, was made and entered, of which the following is an extract: At a session of the Circuit Court of the United States for the Eastern District of Michigan, held at Detroit, &c., on Wednesday, the 8th day of December, 1880.

**NELSON LYON** against **GUYTON T. FISHER, et al.**  
It is ordered, adjudged and decreed, that the act entitled "An act for the relief of Nelson Lyon and Jeremiah S. James," passed by Congress and approved April 1, 1880, &c., is a good, valid and constitutional act. That the original patent, bearing date July 9, 1872, and numbered 124,461, granted and issued to Joseph Barsaloux, Jeremiah S. James and Nelson Lyon, when corrected by the Acting Commissioner of Patents, is directed by said act, was a good and valid patent.

That the said Joseph Barsaloux was the original and first inventor of the improvements in metallic stiffeners for boots and shoe heels mentioned and described in said letters patent. That the Reissued Letters Patent No. 9108 dated May 11, 1880, granted to said Nelson Lyon for an improvement in metallic heel stiffeners for boots and shoes, originally patented as aforesaid, is a good and valid patent; that said Lyon is exclusively possessed of said Letters Patent and the invention thereby secured. That the defendants, G. T. Fisher & Co., and each of them, have infringed upon the said patents and upon the exclusive rights of said Lyon under the same. That said Lyon receive of said defendants all the profits, &c., they have made, and in addition thereto all the damage he has suffered by reason of the infringements by the defendants, and also the costs, charges and disbursements in the action.

It is also further ordered, adjudged and decreed, that a perpetual injunction be issued against said defendants, according to the prayer of the said complainant's bill. You are also hereby notified that the perpetual injunction has been issued and served on the defendants.

All questions as to damages and settlements in relation to infringements under my patents must be addressed to and made with my attorney, **WILLIAM H. KING**, in my care at the above address.

**NELSON LYON.**



## Wilson Bohannon, Manufacturer of Patent

## BRASS PAD LOCKS

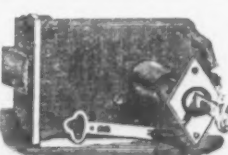
For Railroad Switches, Freight Cars, and the Hardware Trade. All sizes, with Brass and Steel Keys, with and without chains.

Patent Horizontal Rim Cylinder Night Latch.

Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back Knob.

**PASSENGER CAR LOCKS, Bronzed, Nickel-Plated and Japanned**

27 Catalogues and Samples sent upon application. **BROOKLYN, N. Y.**





## New York Wholesale Prices, June 29, 1881.

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[illegible][illegible]

<b>Cutlery.</b>	
Allen, Miller Bros. Cutlery Co. (Tablet).....	dis 25
Humason & Beckley, Pocket.....	dis 33 1/2
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Gray's.....	W dos \$1.70, dis 10 1/2
Werner.....	W dos \$1.70, dis 10 1/2
Worm (Coil).....	W dos \$1.70, dis 10 1/2
No. 1, Japaned.....	W dos \$3.50, dis 10 1/2
No. 2, Medium.....	W dos 2.50, dis 10 1/2
No. 3, Small.....	W dos 2.00, dis 10 1/2
No. 4, Screen Top.....	W dos 2.00, dis 10 1/2
No. 4, "Snno Fly" Screen door size.....	W dos \$1.80, dis 10 1/2
No. 5, Screen Door Size.....	W dos \$2.00, dis 10 1/2
No. 6, Large.....	W dos 3.50, dis 10 1/2
Ababin Lever, No. 1, B; 2, B; 3, B; 4, B; 5, B; 6, B; 7, B; 8, B; 9, B; 10, B; 11, B; 12, B; 13, B; 14, B; 15, B; 16, B; 17, B; 18, B; 19, B; 20, B; 21, B; 22, B; 23, B; 24, B; 25, B; 26, B; 27, B; 28, B; 29, B; 30, B; 31, B; 32, B; 33, B; 34, B; 35, B; 36, B; 37, B; 38, B; 39, B; 40, B; 41, B; 42, B; 43, B; 44, B; 45, B; 46, B; 47, B; 48, B; 49, B; 50, B; 51, B; 52, B; 53, B; 54, B; 55, B; 56, B; 57, B; 58, B; 59, B; 60, B; 61, B; 62, B; 63, B; 64, B; 65, B; 66, B; 67, B; 68, B; 69, B; 70, B; 71, B; 72, B; 73, B; 74, B; 75, B; 76, B; 77, B; 78, B; 79, B; 80, B; 81, B; 82, B; 83, B; 84, B; 85, B; 86, B; 87, B; 88, B; 89, B; 90, B; 91, B; 92, B; 93, B; 94, B; 95, B; 96, B; 97, B; 98, B; 99, B; 100, B; 101, B; 102, B; 103, B; 104, B; 105, B; 106, B; 107, B; 108, B; 109, B; 110, B; 111, B; 112, B; 113, B; 114, B; 115, B; 116, B; 117, B; 118, B; 119, B; 120, B; 121, B; 122, B; 123, B; 124, B; 125, B; 126, B; 127, B; 128, B; 129, B; 130, B; 131, B; 132, B; 133, B; 134, B; 135, B; 136, B; 137, B; 138, B; 139, B; 140, B; 141, B; 142, B; 143, B; 144, B; 145, B; 146, B; 147, B; 148, B; 149, B; 150, B; 151, B; 152, B; 153, B; 154, B; 155, B; 156, B; 157, B; 158, B; 159, B; 160, B; 161, B; 162, B; 163, B; 164, B; 165, B; 166, B; 167, B; 168, B; 169, B; 170, B; 171, B; 172, B; 173, B; 174, B; 175, B; 176, B; 177, B; 178, B; 179, B; 180, B; 181, B; 182, B; 183, B; 184, B; 185, B; 186, B; 187, B; 188, B; 189, B; 190, B; 191, B; 192, B; 193, B; 194, B; 195, B; 196, B; 197, B; 198, B; 199, B; 200, B; 201, B; 202, B; 203, B; 204, B; 205, B; 206, B; 207, B; 208, B; 209, B; 210, B; 211, B; 212, B; 213, B; 214, B; 215, B; 216, B; 217, B; 218, B; 219, B; 220, B; 221, B; 222, B; 223, B; 224, B; 225, B; 226, B; 227, B; 228, B; 229, B; 230, B; 231, B; 232, B; 233, B; 234, B; 235, B; 236, B; 237, B; 238, B; 239, B; 240, B; 241, B; 242, B; 243, B; 244, B; 245, B; 246, B; 247, B; 248, B; 249, B; 250, B; 251, B; 252, B; 253, B; 254, B; 255, B; 256, B; 257, B; 258, B; 259, B; 260, B; 261, B; 262, B; 263, B; 264, B; 265, B; 266, B; 267, B; 268, B; 269, B; 270, B; 271, B; 272, B; 273, B; 274, B; 275, B; 276, B; 277, B; 278, B; 279, B; 280, B; 281, B; 282, B; 283, B; 284, B; 285, B; 286, B; 287, B; 288, B; 289, B; 290, B; 291, B; 292, B; 293, B; 294, B; 295, B; 296, B; 297, B; 298, B; 299, B; 300, B; 301, B; 302, B; 303, B; 304, B; 305, B; 306, B; 307, B; 308, B; 309, B; 310, B; 311, B; 312, B; 313, B; 314, B; 315, B; 316, B; 317, B; 318, B; 319, B; 320, B; 321, B; 322, B; 323, B; 324, B; 325, B; 326, B; 327, B; 328, B; 329, B; 330, B; 331, B; 332, B; 333, B; 334, B; 335, B; 336, B; 337, B; 338, B; 339, B; 340, B; 341, B; 342, B; 343, B; 344, B; 345, B; 346, B; 347, B; 348, B; 349, B; 350, B; 351, B; 352, B; 353, B; 354, B; 355, B; 356, B; 357, B; 358, B; 359, B; 360, B; 361, B; 362, B; 363, B; 364, B; 365, B; 366, B; 367, B; 368, B; 369, B; 370, B; 371, B; 372, B; 373, B; 374, B; 375, B; 376, B; 377, B; 378, B; 379, B; 380, B; 381, B; 382, B; 383, B; 384, B; 385, B; 386, B; 387, B; 388, B; 389, B; 390, B; 391, B; 392, B; 393, B; 394, B; 395, B; 396, B; 397, B; 398, B; 399, B; 400, B; 401, B; 402, B; 403, B; 404, B; 405, B; 406, B; 407, B; 408, B; 409, B; 410, B; 411, B; 412, B; 413, B; 414, B; 415, B; 416, B; 417, B; 418, B; 419, B; 420, B; 421, B; 422, B; 423, B; 424, B; 425, B; 426, B; 427, B; 428, B; 429, B; 430, B; 431, B; 432, B; 433, B; 434, B; 435, B; 436, B; 437, B; 438, B; 439, B; 440, B; 441, B; 442, B; 443, B; 444, B; 445, B; 446, B; 447, B; 448, B; 449, B; 450, B; 451, B; 452, B; 453, B; 454, B; 455, B; 456, B; 457, B; 458, B; 459, B; 460, B; 461, B; 462, B; 463, B; 464, B; 465, B; 466, B; 467, B; 468, B; 469, B; 470, B; 471, B; 472, B; 473, B; 474, B; 475, B; 476, B; 477, B; 478, B; 479, B; 480, B; 481, B; 482, B; 483, B; 484, B; 485, B; 486, B; 487, B; 488, B; 489, B; 490, B; 491, B; 492, B; 493, B; 494, B; 495, B; 496, B; 497, B; 498, B; 499, B; 500, B; 501, B; 502, B; 503, B; 504, B; 505, B; 506, B; 507, B; 508, B; 50	

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Perley's Patent.....No. 1. 7 doz \$17.75; dia 10k to 5  
Brandy's Patent.....dia 10k to 5  
Eldon.....dia 10k to 5  
Yale Lock.....dia 10k to 5  
De Beque.....dia 10k to 5  
Police, Small, 60 x 2; Med., \$7.50; Large, \$12.00, dia 10 to 5  
Yale Lock.....\$3.75 doz, dia 10 to 5

**Lawn Mowers.**  
Pennsylvania, Philadelphia and Excelsior, new  
Horsepower.....dia 30 to 5

**Lemon Squeezers.**  
Porcelain Lined.....\$ doz \$3.00—dia 30 to 5  
Wood.....\$ doz \$3.00—dia 30 to 5  
Yale Lock.....dia 10 to 5  
Dunlap's Improved.....\$ doz \$3.00—dia 30 to 5  
Sammis.....No. 1, \$7.00 No. 2, \$12.00 7 doz; dia 45 to 5  
Horsepower.....\$3.50 doz, dia 33 to 5

**Lines.—Linen Fish**.....dia 30 to 5  
Cotton Chalk.....dia 30 to 5  
St. Lake Chalk.....Nos. 1, 2, 3, \$6.00, \$5.50, \$7.00, dia 25 to 5  
Yale Lock.....dia 10 to 5  
Wire Clothes, Galvanized.....each 25 60 40 net

**Locks and Latches.**  
"Bridgeport" (Changes made in list price of  
"Bridgeport").....dia 25 to 2  
"York".....dia 30 to 2  
Trunk, new list, Jan. 1, 1881.....dia 20 to 2  
Langstroth & Crane's List Jan. 1 '77.....dia 20 to 2  
"F. K.".....No. 1, \$6.10 14.....dia 20 to 2  
A. Flat Key.....dia 25 to 10  
F. K. Key.....dia 25 to 10  
Yale Lock Co. Flat Key.....dia 25 to 10  
"Shepardson" or U. S.....dia 25 to 10  
"Hartley" or "Jermier".....dia 25 to 10  
Plate.....dia 25 to 10  
F. Manly's Extension Cylinder.....dia 25 to 10  
Horsepower.....dia 25 to 10

**Locks.**  
Brannford.....dia 25 to 10  
Norwalk.....dia 25 to 10  
Yale Lock.....dia 25 to 10  
P. & F. Corbin.....List of June 10, with changes  
of Nov. 1, 1881, and April 1, 1882, dia 25 to 10  
Yale Lock, Wines.....dia 25 to 10  
Reading Hardware Co.....dia 25 to 10  
London.....dia 25 to 10  
Padlocks—Gusell & Erwin.....dia 25 to 10  
"Yale Lock, Wines & Co.".....dia 25 to 10  
"Yale Lock Mfg. Co.".....dia 25 to 10  
"Horn's".....dia 25 to 10  
"J. H. Row".....dia 25 to 10  
A. E. Dietz.....dia 25 to 10  
Lustro.....dia 25 to 10  
"Hickory".....dia 25 to 10  
Fennell Block Co., Lig., Apple & Hickory.....dia 25 to 10

**Meat Cans.**  
Dixon's (P. S. & W.) Nos. 1.....dia 25 to 10  
Mills' Challenge.....Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 6



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**Shovels and Spades.**

New List, Jan. 30, 1895.....dis 75¢

Griffith.....dis 40¢

Payne Pettibone & Son, No. 1 Shovel.....dis 12¢

Hemlin's (Lowman's Patent).....dis 16¢

Romond's.....dis 10¢

**Shovels and Tongs.**

Iron and Brass Head, K. & L. list.....dis 50¢

**Nails.**

Square Frames.....by case.....dis 70 ¢

Less than a case.....dis 60 ¢

**Spoke Shaves.**

Dennett's.....dis 20 ¢

Iron.....dis 45 ¢

Hand.....dis 5 ¢

Stearns.....dis 35 ¢

**Spoke Trimmers.**

No. 1, \$15.00; No. 2, \$12.00; dis 50 ¢

No. 1.....dis 15 ¢

**Spoons.**

Basting.....dis 6 ¢

Riveted Table and Tea.....dis 5 ¢

Britannia.....dis 4 ¢

The Wm. Rogers Mfr. Co.....dis 4 ¢

Hall & Elton.....dis 4 ¢

Holmes, Booth & Hayden.....dis 4 ¢

Cast Steel, Sil. Plated.....dis 4 ¢

Tin (C. W. & J.) Pens.....\$1.25 gross, net

Tin Corvus Hd. Co.....\$2.00 gross, net

case lots.....dis 25 ¢

**Sticks and Pins.**

"Double" Screw Plate.....dis 10 ¢

**Nirde.**

Hindustan Hacker Stone.....\$ gross \$12.00 dis 10 ¢

Round Stone.....\$ gross \$4.50 dis 10 ¢

Arkansas Stone.....No. 1, \$1.00 net

No. 2, \$ .75 net

Lake On Stone (Chase).....\$10.00 dis 10 ¢

Supers.....\$1.00 dis 10 ¢

Surfer (Pinner) (Chase).....\$1.00 dis 10 ¢

Griststone Family, Long's.....dis 10 ¢

**Stone Plates.**

Joseph Dixon's.....\$ gross \$6.00 dis 10 ¢

Gold Medal.....\$ gross \$4.50 dis 10 ¢

Mirror.....\$ gross \$6.00 dis 10 ¢

Rising Sun.....\$ gross \$7.75 net

Dixon's Plumage.....\$1.00 net

**Squares.**

Dis 5 ¢ full cases, dis 10 ¢

Nickel Plated.....add \$2.00 to \$4.00 per doz, net

Dixson's Try Square and T Bevel.....dis 40 ¢

Winterbottom's Try and Mitre.....dis 20 ¢

**Tacks, Brads &c.**

Tinned American.....dis 4 ¢

Swedish King.....dis 3 ¢

Copper Tacks and Nails.....dis 3 ¢

Sweden Hungarian Nails.....dis 3 ¢

Gimp and Lace Tacks.....dis 25 ¢

Finishing Nails.....dis 25 ¢

Common and Patent Brads.....dis 25 ¢

Basket Nails.....dis 25 ¢

Leathered Carpet Tacks.....dis 25 ¢

American Cut Tacks.....dis 25 ¢

Chair Nails.....dis 25 ¢

Double-Pointed Tacks.....dis 25 ¢

**Tar Bore.**

Common Tar Boring.....dis 10 ¢

Live Tar Bore.....dis 10 ¢

Enterprise Mfg. Co.....dis 10 ¢

**Tape Measure.**

Spring Tapes.....dis 20 ¢

**Thermometers.**

Dis 70 ¢

**Tobacco Cutters.**

Enterprise Mfr. Co. (Chambliss).....dis 25 ¢

All Iron.....\$10.00 dis 25 ¢

Nashua Lock Co.'s.....\$10.00 dis 25 ¢

**The Calks Cutter.**

Dis 25 ¢

**Tinners' Tools and Machines.**

Machines (P. & S. W.).....list add 5 ¢

Tools (P. & S. W.).....add 5 ¢

**Tramion Lifters.**

Richards' Patent.....dis 10 ¢

**Traps.**

Game, Newhouse.....dis 10 ¢

Ovidia Patern.....dis 25 ¢

Mouse, Wood Choker.....\$10.00 dis 10 ¢

Round Wire.....\$10.00 dis 10 ¢

Catch-em-alive.....\$10.00 dis 10 ¢

Nat. "Decoy".....per doz \$10.00, dis 10 ¢

**Lubricants.**

Reed's Brick and Plastering.....dis 25 ¢

Pestle and Mortar.....dis 20 ¢

Plastering.....dis 20 ¢

Clement & Maynard's.....dis 20 ¢

Rose's Brick.....dis 15 ¢

Worral's Brick and Plastering.....dis 15 ¢

Garden.....dis 15 ¢

**Butter and Cheese.**

dis 25 ¢

**Vices.**

Solid Block.....List of July 1, '90 dis 10 ¢

Wilkinson's.....dis 10 ¢

Parallel.....dis 10 ¢

Wilson's.....dis 10 ¢

Howard's.....dis 10 ¢

Burgess's.....dis 15 ¢

Trenton.....dis 15 ¢

Oval Slide.....dis 15 ¢

Double Screw Leg.....dis 15 ¢

Simpson's Adjustable.....dis 15 ¢

"Family" List.....net

Bay's Pliers.....\$14.00, dis 10 ¢

Star's.....dis 10 ¢

Hopkins.....dis 10 ¢

Lowell Hand Vice.....dis 10 ¢

Richardson's Vise and Anvil.....dis 10 ¢

**Washer Cutters.**

Johnson's.....\$10.00 dis 25 ¢

Fenny's.....\$10.00 and \$10.00, dis 25 ¢

**Washers.—See Nuts and Washers.**

**Well Wheels.—Ranned list.**

Brigs and Conner.....List of June 10, 1895.....dis 10 ¢

Galvanized.....Nos. 1 to 10.....dis 10 ¢

Cooper'd.....Nos. 27 to 30.....dis 10 ¢

Tinne.....Nos. 7 to 10.....market list, dis 10 ¢

Cast Steel.....dis 10 ¢

Tinned Round Wire.....Nos. 10 to 25.....dis 10 ¢

Ankled.....dis 10 ¢

Galvanized Telegraph.....Nos. 7 to 9.....dis 10 ¢

Wire Cloth, green and drab.....\$1.00, dis 10 ¢

**Wrenches.**

Adjustable.....dis 10 ¢

Diagonal.....dis 10 ¢

Cooper's.....dis 10 ¢

"Mechanics".....dis 10 ¢

Pattern, Malleable.....dis 10 ¢

Glrand Adz.....dis 10 ¢

Beams & Call's Patent Combination.....dis 10 ¢

"Brigs" Pattern.....dis 10 ¢

Cylinder or Gas Pipe.....dis 10 ¢

Broken Pocket (Bright).....dis 10 ¢

The Favorite Pocket (Bright).....dis 10 ¢

Douglas.....dis 10 ¢

**Winners.**

Universal, X.X. No. 174.....\$5.00

No. 2.....\$5.00

No. 3.....\$5.00

No. 4.....\$5.00

No. 5.....\$5.00

No. 6.....\$5.00

No. 7.....\$5.00

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No. 99.....\$5.00

No. 100.....\$5.00

No. 101.....\$5.00

No. 102.....\$5.00

No. 103.....\$5.00

No. 104.....\$5.00

No. 105.....\$5.00

No. 106.....\$5.00

BRASS AND COPPER TUBES,  
JAN SEAMLESS & RIFLED  
MERCHANT & CO. PHILADA.

**S. H. & E. Y. MOORE,**  
163 and 165 LAKE ST.,  
**CHICAGO,**  
AGENTS FOR  
**PROVIDENCE TOOL CO.,**  
Reading Bolt and Nut Works,  
Syracuse Bolt Company,  
Hotchkiss & Gaylord,  
Wm. H. Haskell & Co.,  
Syracuse Horse Nail Co.,  
Black Diamond File Works,  
J. M. Carpenter (Taps & Dies),  
Penfield Black Works.  
**MANUFACTURERS OF**

Nuts, Bolts, Washers, Gimlet Point Coach  
Screws, Endless Chain, Ice Chain, Threshing  
Machine Teeth, Turn Buckles, Tackle Blocks,  
Ship Chandlery Hardware, Files, Taps, Wood  
Screws, Rivets, &c. Also

**"Climax" Barn Door Hangers,**  
The standard Anti-Friction Barn Door Hanger.  
Over 150,000 pairs already in use. Send for Circular  
and Price List.

A large, ornate metal key, likely a ceremonial or historical artifact. The head is circular with a central knob and radiating spikes. The shaft is long and narrow, featuring a central longitudinal groove and several circular holes along its length. The number '2' is inscribed near the bottom.

Manufactured by

**S. H. & E. Y. MOORE,**  
163 & 165 Lake St., Chicago, Ill.

---

**DAVID BLOCK,**  
Manufacturer of  
**Plain, Stamped & Japanned**  
**TIN WARE.**

Block's Tin Spout Strainer & Patent O.K. Grater.



**BLOCK'S STRAINER.**  
Sole and Salesroom,  
**65 & 67 BAYARD STREET,**  
Factory, 139 & 141 Centre St., NEW YORK.

**FOUNDRYMEN'S METALLIC**  
**Pattern Letters and Figures,**  
To put on patterns of castings. All sizes. Re-  
duced prices. Mfd. by H. W. Knight Seneca Falls, N.Y.

# NEW ENGLAND BUTT CO.,

Manufacturers of

## Drilled Cast Butt Hinges

IN GREAT VARIETY.

New England Gate Hinges. Sad Irons, Polishing Irons.

Woolman's Self-Closing Gate Hinges. Mrs. Cook's, McCoy's and New England Polishing Iron

Barn Door Hangers, Rolls & Rail. Laundry and Tailors' Irons.

Sliding Door Rolls and Way. Tailors' Box Irons.

Butterworth Window Springs. Detachable Handle Sad Irons.

Grindstone Fixtures. Waffle Irons.

Patent Saw Clamps. Foot Scrapers.

Patent Floor Jacks. Patent Foot Scraper and Cleaner.

Cistern Tops and Covers. Braiding Machinery for Silk, Worsted

Stair Rail, Store and Fancy Brackets. or Cotton, and for covering

Harness Hooks and Brackets. Whips and Telephone Wire.

Flush Hubs, Small Anvils, Dumb Bells. Fine Castings a specialty.

**WORKS AT PROVIDENCE, R. I.**

**New York Office, - - - 99 Chambers Street.**

**BOSTON AGENTS-NASHUA LOCK CO.**

**No. 70.**  
New Pattern.

**HAND FLUTER**  
PATENTED.



White Metal Plate and Roller with Iron Stand and Heaters.

**WILL NOT CORRODE!**

SOLE MANUFACTURERS,  
**SHEPARD HARDWARE CO., BUFFALO, N. Y.**



**WM. A. CLARK'S**  
**Patent Steakgreith.**  
Office, 96 Chambers, St., N. Y.

This article is designed to make Meat tender and prepare it for cooking. It does not pound the meat, but renders the toughest steaks and other meats tender all the way through. It has been in the market but a short time, and there are already nearly 20,000 in use.

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See Page 3.

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Alumina.....	1.94
Lime.....	0.33
Magnesia.....	0.04
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	100.43

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	Pig Metal.....110,000 "
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	Steel Rails.....100,000 "
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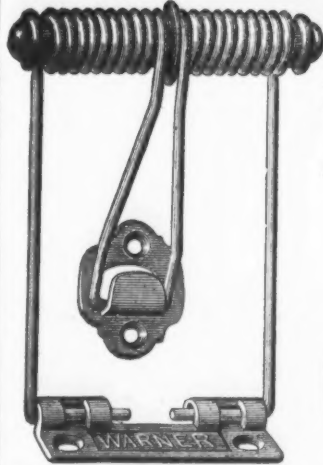
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to the *Ironmonger and Metal Trades Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is \$3 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful *Ironmongers' Diary and Text Book*, a work sold to non-subscribers at 75 cents.

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This is an annual, presented free to every subscriber to the *IRONMONGER AND METAL TRADES ADVERTISER*. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

## THE FOREIGN SUPPLEMENT,

With which is incorporated The Universal Engineer.

Is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:  
JULY 21, AUGUST 22, SEPTEMBER 17, OCTOBER 8, NOVEMBER 6, DECEMBER 3 and 31, 1881, JANUARY 28, FEBRUARY 25, MARCH 23, APRIL 22, MAY 20 and JUNE 17, 1882.

This Supplement is published in

**FOUR LEADING COMMERCIAL LANGUAGES**

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach of the native language of eighty millions of German, forty-two millions of French, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger and Foreign Supplement* is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.












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HOSE  
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Agents Wanted for Different Locations.

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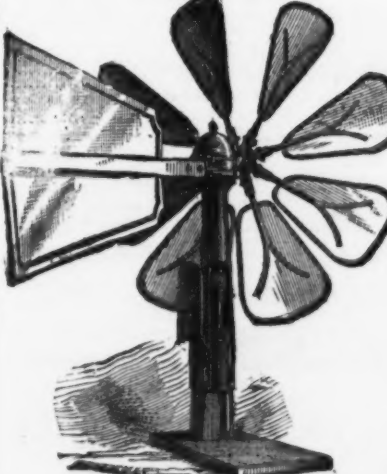
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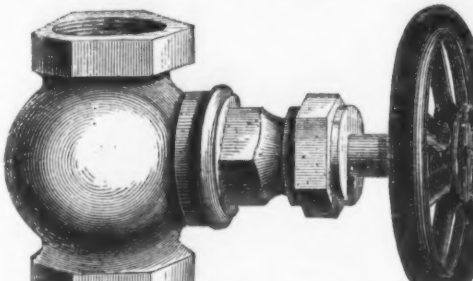
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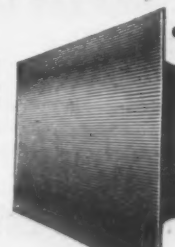

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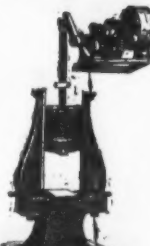


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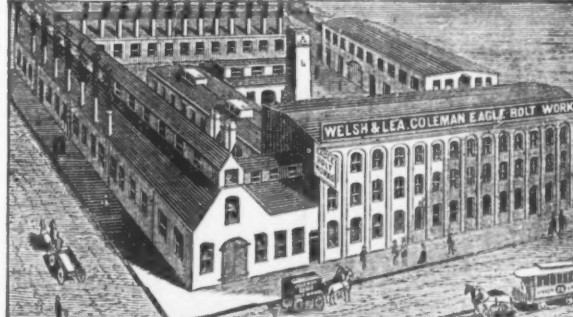


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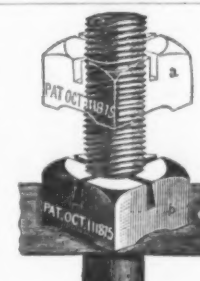
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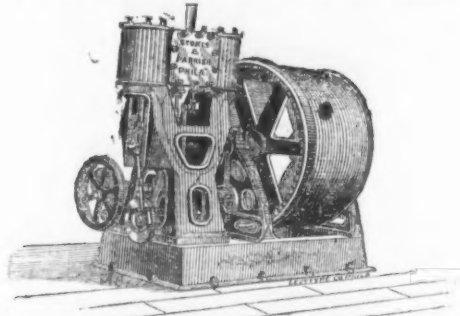


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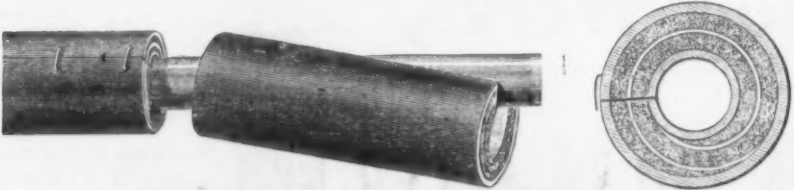
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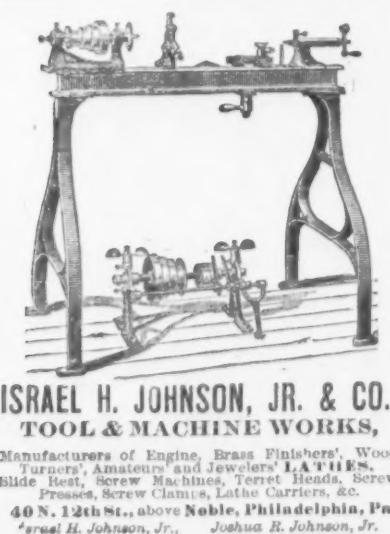
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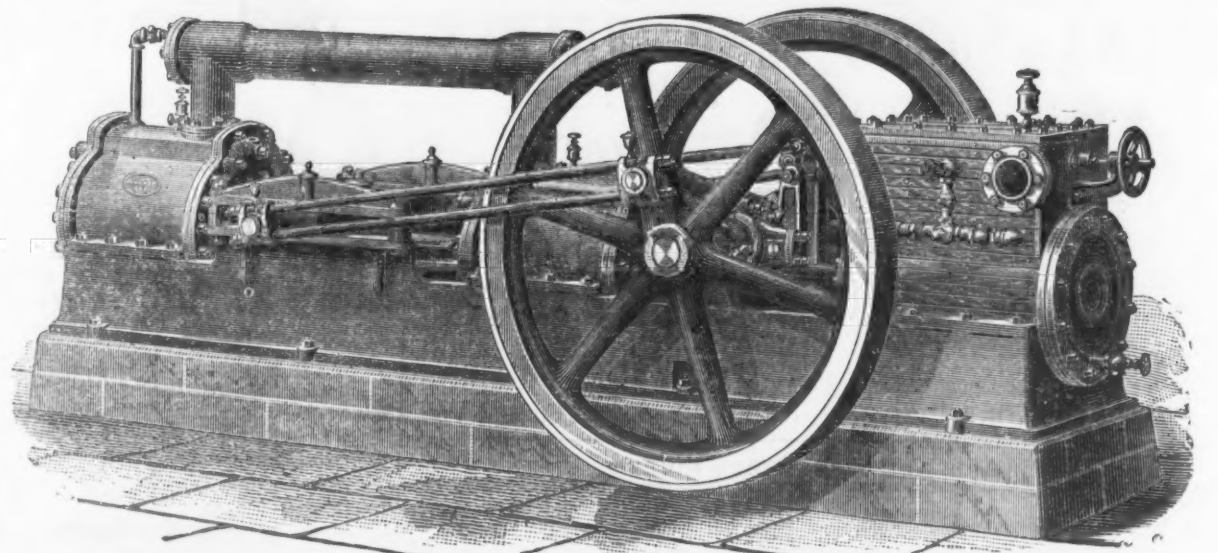
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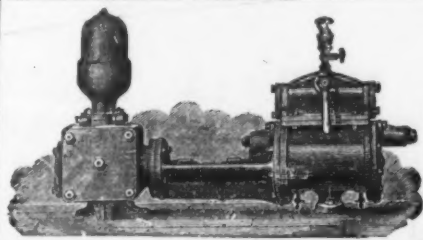
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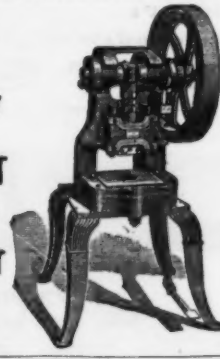
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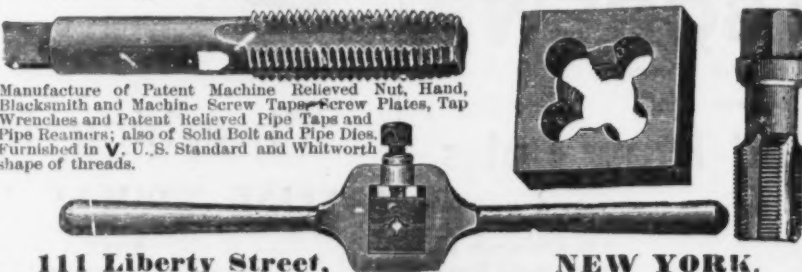
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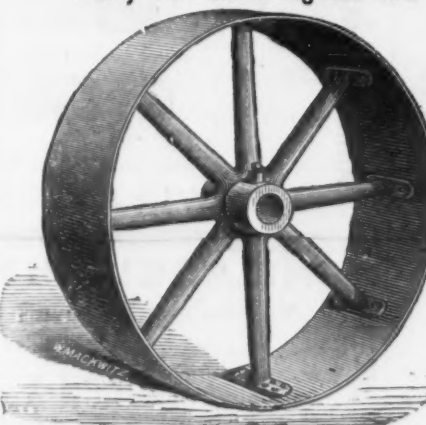


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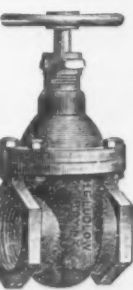
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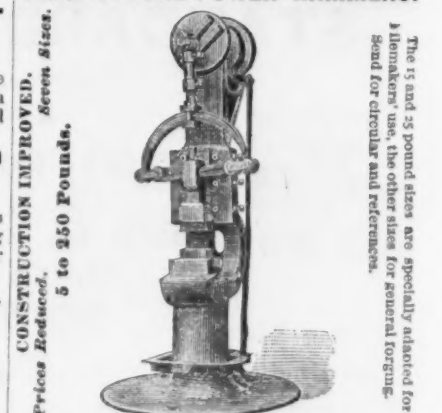



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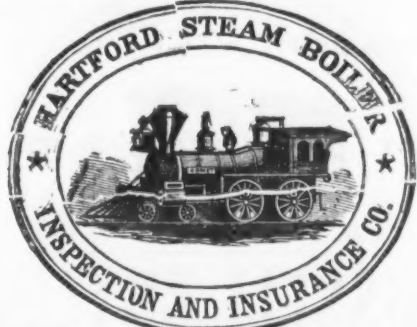
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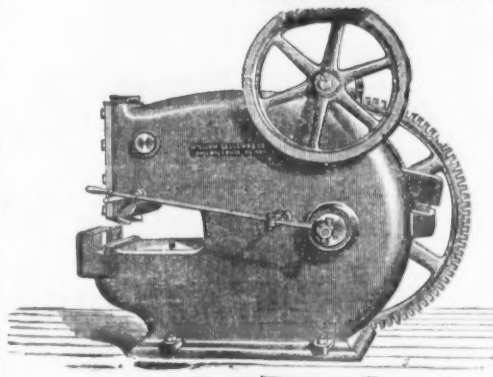
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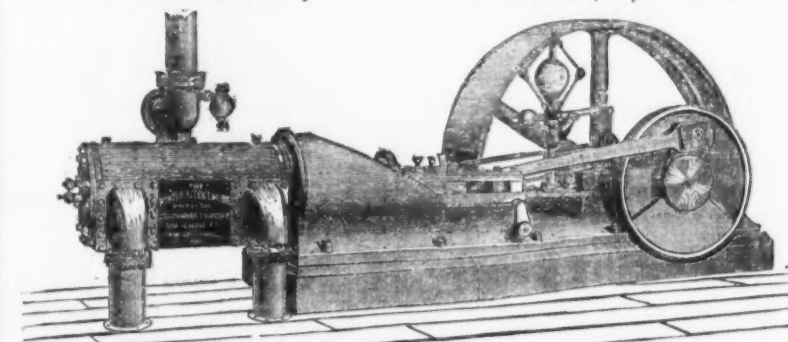
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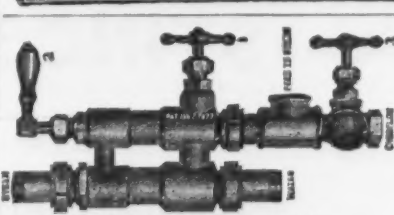
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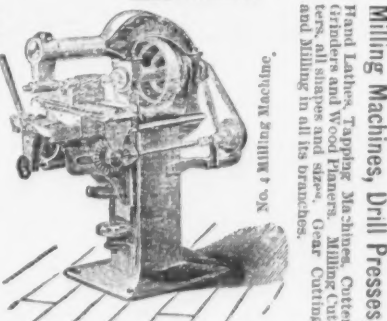
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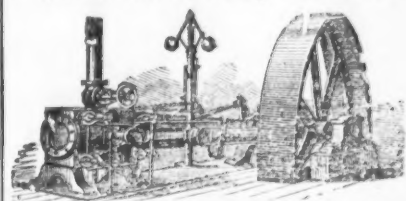
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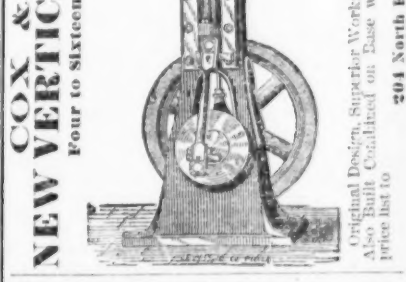
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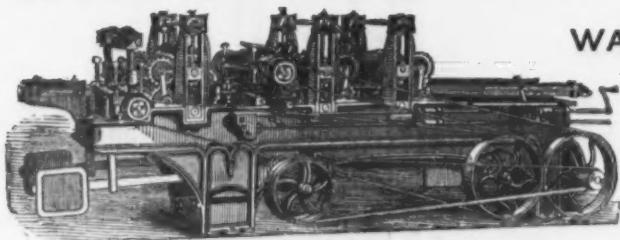
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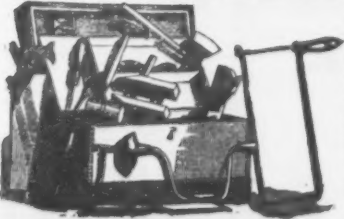
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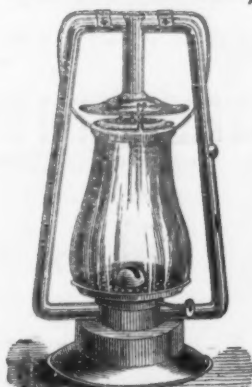
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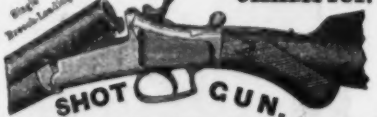
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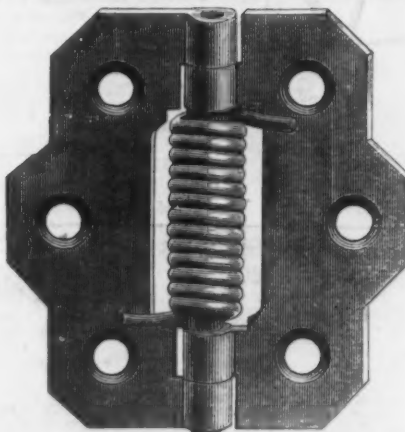
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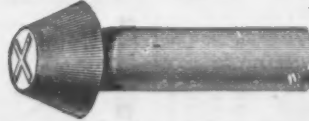
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